MORSE Course Handbook

Department of Statistics, University of Warwick

Version: 09-May-2023

1 General Information

This handbook is a guide prepared by the Department of Statistics for students on all variants of the Mathematics, Operational Research, Statistics and Economics (MORSE) degrees. It contains essential information about the regulations and policies governing the programmes. The material in this handbook is for students that commenced their year 1 studies before the 2022-23 academic year. If you commenced your studies in the 2022-23 academic year or later, please see the relevant course handbooks available on the department's course handbook page.

Alongside the pages of this handbook, please consult the Amendments and Errata section, where a list of dated changes since the beginning of the current academic session is maintained.

If you are reading this in hardcopy or PDF, please note that the up to date version is maintained for current students by the Department of Statistics.

All content in this handbook that is about changes in regulation or arrangements in response to the Covid-19 pandemic is clearly prefixed with **Covid-19 Arrangements**. In the unlikely case of conflicts between that content and other parts of the handbook, then the content prefixed with **Covid-19 Arrangements** take precedence.

The information and guidance displayed in these pages is current at the revision date of each page.

Amendments and Errata

Date	Handbook section	Description

1.1 About MORSE

1.1.1 Background to MORSE

Over the past fifty years mathematics has begun to realise some of its enormous potential, for application in management, finance, industry, government, education, medicine and

other areas. Consequently, the demand for people skilled in mathematics and its applications has accelerated rapidly. It was in response to this demand that MORSE and, more recently, the 4-year integrated Masters degree were created.

MORSE and the integrated Masters degree are honours degrees involving four departments: Mathematics, Statistics, Economics, and the Warwick Business School. They provide fully integrated courses leading to a solid grounding in the four component subjects and offer an excellent basis for a multitude of careers.

The degrees are administered by the Department of Statistics which has been consistently graded very highly in the exercises to assess the quality of the University research. In the 2021 REF (Research Excellence Framework) exercise, the Warwick Statistics and the Warwick Mathematics Institute together were ranked **6th** in the UK for research excellence and **3rd** for research power, with **99%** of our research activity assessed as either **internationally excellent** or **world leading**.

1.1.2 Aims

The MORSE and the integrated Masters degrees set out to provide three things.

Firstly, courses which will stimulate interest in mathematical concepts, with particular reference to the major areas of application. Secondly, to improve the quality and quantity of mathematically skilled people working, researching and teaching in these areas; and thirdly, to satisfy the needs of those students who seek a continuous development of mathematics from school through university to postgraduate application.

In common with other mathematical science degree courses at Warwick we aim to:

- Attract well-qualified students
- Provide an intellectually stimulating environment
- Help students develop key intellectual skills
- Provide a challenging education in mathematics/statistics and their applications
- Produce high-quality graduates who are well prepared for the next step of their professional lives whether this involves further research training or moving directly into a career.

Specific aims of these degree courses are to:

- Provide courses based on mathematics and its applications in statistics, operational research and economics suitable for students aiming for a career involving one or more of these areas
- Enable students on the integrated Masters degree to study these areas more deeply.

Detailed objectives for each year are to be found at in the relevant section.

1.1.3 RSS Accreditation

The Royal Statistical Society (RSS) accredits the MORSE BSc and Integrated Masters.

Details of the requirements for accreditation are available on the departmental web-page.

1.2 Courses

1.2.1 BSc in MORSE

The first two years of this three year MORSE degree (Y602) follow a (mainly) fixed set of modules, laying the foundations of the four main subjects. For part of the first two years, and the whole of the third, students are free to choose from a wide range of topics. Final year students can elect to specialise in one or two of the main subject areas or can continue a balanced programme by selecting topics from all four departments.

The first year counts 10%, the second year 30% and the third year 60% towards the final BSc degree mark.

Covid-19 Arrangements

For students who studied the first year of a Statistics course in 19/20, and whose first year marks were subject to force majeure, the first year counts 0%, the second year 30%, and the third year 70% towards the final BSc degree mark.

1.2.2 Integrated Masters Degree in MORSE

G300 (BSc Masters MORSE) allows students to take a degree whose title makes explicit the fact that they have covered the material which leads to a Bachelor degree as well as material at Masters Level.

The first two years are in common with the BSc degree in MORSE.

Students at the end of the second year must choose one of 4 possible streams:

- Actuarial and Financial Mathematics
- Econometrics and Mathematical Economics
- Operational Research and Statistics
- Statistics with Mathematics

Students may change stream at any point provided their module registrations satisfy or can be amended to satisfy the course regulations of the destination stream for both the third and fourth year.

The integrated Masters degree requires students to study a minimum of 120 CATS worth of modules at the Masters level and includes a 30 CATS Masters dissertation. This degree enables students to embark on research in an area in which they have specialised whilst also providing them with a wide variety of career opportunities.

The first year counts 10%, the second year 20%, the third year 30% and the fourth year 40% towards the Integrated Masters degree mark.

Covid-19 Arrangements

For students who studied the first year of a Statistics course in 19/20, and whose first year marks were subject to force majeure, the first year counts 0%, the second year 20%, the third year 35% and the fourth year 45% towards the Integrated Masters degree mark.

1.2.3 Intercalated Year

An intercalated year is spent away from the University, and in roles either as work in industry, study at a university overseas or a combination of both. The intercalated year can be taken between the 2nd and 3rd years of a degree course, or between the 3rd and 4th years of an Integrated Masters course. Students who pass the intercalated year will be awarded a degree certificate with the title including "with Intercalated Year".

1.2.4 Courses covered by this handbook

Course Code	Course Name*
Y602	BSc MORSE
Y603	BSc MORSE with Intercalated Year
G300	MMORSE
G301	MMORSE with Intercalated Year
G30A	MMORSE Actuarial and Financial Mathematics
G30B	MMORSE Econometrics and Mathematical Economics
G30C	MMORSE Statistics with Mathematics
G30D	MMORSE Operational Research and Statistics
G30E	MMORSE Actuarial and Financial Mathematics with Intercalated Year
G30F	MMORSE Econometrics and Mathematical Economics with Intercalated Year
G30G	MMORSE Statistics with Mathematics with Intercalated Year
G30H	MMORSE Operational Research and Statistics with Intercalated Year

* The course names shown are those in common usage not the actual degree title conferred.

1.2.5 Other Courses delivered by Department of Statistics

Course Code	Course Name*
G302	Data Science BSc
G303	Data Science BSc with Intercalated Year

Course Code	Course Name*
G304	Data Science MSci
G305	Data Science MSci with Intercalated Year
GG14	Mathematics and Statistics BSc (MathStat)
GG17	Mathematics and Statistics BSc with Intercalated Year
G1G3	Integrated Masters Mathematics and Statistics (MMathStat)
G1G4	Integrated Masters Mathematics and Statistics (MMathStat) with Intercalated Year

* The course names shown are those in common usage not the actual degree title conferred.

1.3 Contacts and Key People

1.3.1 Statistics Support Office

The normal point of contact for general information is the Student Support Office. If you need to contact the Department urgently, in the first instance you should contact the Student Support Office in person, by email, or by phone.

- Location: MB0.11 (Ground floor of Mathematical Sciences Building)
- Postal Address: Student Support Office, Department of Statistics, University of Warwick, Coventry, CV4 7AL
- Telephone: +44 (0)2476 522290 (Internal: 22290)
- Opening hours:

Please note that the Support Office will be **closed** for lunch each day at **12:30 - 13:30**.

Day	Hours
Monday, Wednesday and Thursday	09:00 - 16:30
Tuesday	10:00 - 16:30
Friday	09:00 - 15:30

- Undergraduate enquiries: stats.ug.support@warwick.ac.uk
- Postgraduate Taught enquiries: stats.msc.support@warwick.ac.uk

1.3.2 Key Contacts

1.3.2.1 Department

Head of Department: Prof Jon Forster

Deputy Head of Department (Teaching and Learning): Dr Dario Spano

Director of Student Experience (and SSLC Convenor): Dr Nick Tawn

Director of Undergraduate Studies: Dr Martyn Parker statsdugs@warwick.ac.uk

1.3.2.2 Course

Data Science Course Director: Prof Ioannis Kosmidis (Statistics), Dr Weiren Yu (Computer Science) datsci@warwick.ac.uk

MathStat Course Director: Dr Jonathan Warren mathstat@warwick.ac.uk

MORSE Course Director: Dr Massimiliano Tamborrino morse@warwick.ac.uk

Deputy MORSE Course Director: Dr Miryana Grigorova morse@warwick.ac.uk

MSc Course Director: Prof Chenlei Leng

PhD Director: Dr Anastasia Papavasiliou

Intercalated Year Co-ordinator: Dr Thomas Berrett st.intercalated.yr@warwick.ac.uk

1.3.2.3 Community and Welfare

Senior Tutor: Dr Jere Koskela stats.senior.tutor@warwick.ac.uk

Year 1 Tutor: Dr Sam Olesker-Taylor stats.year1.tutor@warwick.ac.uk

Year 2 Tutor: Dr Daniel Valesin stats.year2.tutor@warwick.ac.uk

Year 3/4 Tutor: Dr Ritabrata (Rito) Dutta stats.year3n4.tutor@warwick.ac.uk

Disability Coordinator: Dr Ritabrata (Rito) Dutta

Student Support and Progression Officer: Minhaz Ali Minhaz.Ali@warwick.ac.uk

1.3.2.4 Careers

Careers Consultant: Sam Brown Sam.Brown@warwick.ac.uk

1.3.3 Staff Contacts

All staff are listed on the Departmental web page and have an individual information page with the contact details linked from the main page.

Academic staff with personal tutees and / or teaching have office hours per week during term time, which are advertised on their staff page.

1.3.4 Other Departmental Support Offices

1.3.4.1 Computer Science

- Location: CS0.05
- Email: comp-sci@dcs.warwick.ac.uk
- Telephone: +44 (0)24 7652 3193

1.3.4.2 Economics

- Location: S2.134
- Email: economics.ugoffice@warwick.ac.uk
- Telephone: +44 (0)24 7652 3933

1.3.4.3 Mathematics

- Location: B0.01 (Zeeman Building)
- Email: ugmathematics@warwick.ac.uk
- Telephone: +44 (0)24 7652 4695

1.3.4.4 Warwick Business School

- Location:0.002b
- Email: undergraduate@wbs.ac.uk
- Telephone: +44 (0)24 7652 4687

1.4 Facilities

1.4.1 Department Buildings and Access

The Statistics Department is located in the Mathematical Sciences Building, which also houses Computer Science and Mathematics. It was completed in October 2018 and provides spaces for interdisciplinary collaboration and enhanced student experience.

The building is open access between 8 am and 6 pm, however students with their home department in Statistics can use their University Cards at all times to access the ground floor. Please do not allow anyone to tailgate you into the building outside of normal hours.

1.4.2 Common Room

The student common room is located in MB0.14, on the ground floor of the Mathematical Sciences Building. All students with their home department in Statistics can access the room using their University Card and will be able to find their pigeon hole in the common room. There is also a water boiler, communal fridge, sink, dishwasher, noticeboards and tables which can be used by all students. Please make yourself at home but be respectful of others by keeping the fridge and communal spaces tidy.

The common room may be used for work. However, its primary purpose is a social area so there may be quieter areas for working.

1.4.3 Work Areas

MB0.10 is a computer work room that can be used by any student with their home department in Statistics.

MB0.02 is a computer room on the ground floor of the Mathematical Sciences Building. It is sometimes used for teaching sessions but can be used by students for study whenever not in use.

There are areas located in various places on floors 1 to 3 which contain desks and blackboards and can be used between 8 am and 6 pm.

1.4.4 Work Area Etiquette

Noise – work areas are intended for quiet study so if you wish to chat with your friends please use the atrium or find another location.

Please do **not**:

- Use mobile phones, skype or other such systems
- Play music or computer games etc
- Leave food, drink, clothing etc in the work areas
- Move furniture
- Leave the work areas untidy - we will spot check and people not complying with the rules will be asked to leave
- Spread your belongings onto more than one desk
- Allow unauthorised people into the computer room, common room or the building

Please be prepared to show your University ID card if asked.

The Department is not responsible for any items left, lost or stolen in the work areas.

Any problems or queries please talk to the Support Office.

2 Course Regulations and Progression

The definitive Course Regulations for all degree courses in the Department of Statistics are derived from the most recent on-line version of this handbook, which is available from the Department of Statistics handbook pages.

The lists of modules and other advice that appear in the printed version are provided as a convenience to students.

Some of the information in the printed version of the Course Guide may become outdated as the academic year progresses. The definitive source for the course regulations is therefore the Department of Statistics web page mentioned in the previous paragraph.

Optional Modules are subject to change from year to year. Additionally, some modules may be subject to availability / module pre-registration.

2.1 Year 1 MORSE Course Regulations

Important note: Regulations in this section are for students who entered in 21-22 or earlier and are retained here for posterity. Students who entered in 22-23 or later should consult the handbook for the new curriculum held on the Department of Statistics handbook pages.

2.1.1 Loading / Requirements

The minimum and normal load is **120 CATS**.

The maximum load is **140 CATS points**. The only exception is that for students taking 24 CATS of Language options, the maximum load is **144 CATS**.

The core modules (totalling 120 CATS) must be taken.

Required modules (or specified components) must be passed at >40% to progress.

It is not permitted to;

- take the 12 CATS module MA133 Differential Equations.
- take more than 30 CATS of Unusual Options.

Any modules not listed (including foreign languages) are classed as Unusual Options and permission to take these modules must be obtained with a completed Unusual Option form submitted to the support office by the specified deadline. Unusual options count towards your load but they do not count, under any circumstances, towards CATS requirements described in the course regulations where these regulations refer to Core Modules, Optional Modules, or letter Lists (e.g. List A, List B etc.). Further information about Unusual Options and deadlines can be found in section 3.4 of the handbook.

2.1.2 Core Modules

Code	Name	CATS	Term	Req
EC106	Introduction to Quantitative Economics	24	1, 2	Yes
IB104	Mathematical Programming I	12	3	Yes
MA106	Linear Algebra	12	2	Yes
MA137	Mathematical Analysis	24	1, 2	Yes
MA138	Sets and Numbers	12	1	
ST104	Statistical Laboratory 1	12	2, 3	
ST115	Introduction to Probability	12	2	Yes
ST116	Mathematical Techniques	12	1	

Modules marked as "Yes" under "Req" must be passed at ≥40% in addition to other progression requirements.

The teaching term shown is for information only and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

2.1.3 Optional Modules

Optional module lists are subject to change from year to year and all optional modules are subject to availability.

Code	Name	CATS	Term
MA113	Differential Equations A	6	2
MA117	Programming for Scientists	12	2
MA125	Introduction to Geometry (suspended in 22/23)	6	1
MA134	Geometry and Motion	12	2
PH136	Logic 1: Introduction to Symbolic Logic (for non-Philosophy students)	15	2
PH146	Reason, Argument and Analysis	15	1
PX101	Quantum Phenomena	6	3
PX144	Introduction to Astronomy	6	2
PX147	Introduction to Particle Physics	6	2
PX148	Classical Mechanics and Relativity	12	1

The teaching term shown is for information only and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

2.1.4 Notes on Course Regulations

The core modules for the first year of MORSE are considered to amount to a full academic year's work (120 CATS credit) and there is no requirement for you to take any additional modules. However, if you choose, you may register for additional, optional modules. Additional modules may have no effect on your overall average mark for the year (see section on classification for further information). Bear in mind an extra module is a big commitment and you must be careful not to take on too much.

Any additional modules and the marks you gain in them will appear on your academic record. It can be worth doing additional modules for the skills you gain, as for example, in the case of foreign languages.

MORSE students with a deeper mathematical interest are strongly advised to take MA113 Differential Equations A as this is a core prerequisite for MA254 Theory of ODEs and other more advanced modules on (partial) differential equations. Note that you are not permitted to take the 12 CATS module MA133 Differential Equations.

If you are interested in transferring to Data Science at the end of your first year you **must** take the optional module MA117 Programming for Scientists and also CS126 Design of Information Structures as an unusual option.

2.1.5 First Year Learning Outcomes

After completing the first year, students will have:

- Made the transition in learning style and pace from school to university mathematics.

- Been introduced to the basic concepts in university mathematics, including the notion of proof, and the applications of mathematics to problems outside mathematics.
- Been introduced to basic concepts in economics and operations research.
- Laid the foundations of knowledge, understanding and techniques necessary to proceed to the second year.

2.2 Year 1 MORSE: Progression and Outcomes

Important note: Regulations in this section are for students who entered in 21-22 or earlier and are retained here for posterity. Students who entered in 22-23 or later should consult the handbook for the new curriculum held on the Department of Statistics handbook pages.

2.2.1 Requirements for Progression

2.2.1.1 Students starting in or before 20/21

In order to progress to the second year of the degree programme you must;

1. Have an overall year mark of 40 percent or above
2. Pass at least 80 CATS of whole modules
3. Pass (with a module mark of 40 percent or above) the following core-required modules:

- EC106 Introduction to Quantitative Economics
- IB104 Mathematical Programming 1
- MA137 Mathematical Analysis
- MA106 Linear Algebra
- ST115 Introduction to Probability

If you do not meet the above requirements then the Exam Board will require you to take further attempts in certain modules in September. More information about further attempts can be found in the section on examinations and assessment.

2.2.1.2 Students starting in or after 21/22

In order to progress to the second year of the degree programme you must;

1. Have an overall year mark of 40 percent or above
2. Pass at least 90 CATS of whole modules
3. Pass (with a module mark of 40 percent or above) the following core-required modules:

- EC106 Introduction to Quantitative Economics
- IB104 Mathematical Programming 1
- MA137 Mathematical Analysis
- MA106 Linear Algebra

- ST115 Introduction to Probability

If you do not meet the above requirements then the Exam Board will require you to take further attempts in certain modules in September. More information about further attempts can be found in the section on examinations and assessment.

2.2.2 Outcomes from the Summer Examination Board

The possible outcomes of the first year Summer examination board are as follows:

a. Permitted to proceed to second year of study
b. Permitted to proceed to second year of study with optional further attempts
c. Required to take further attempts

2.2.3 Outcomes from the September Examination Board

The possible outcomes of the first year September examination board are as follows:

a. Permitted to proceed to second year of study
b. Required to take further attempts at next available opportunity
c. Required to withdraw

Students who have not met progression requirements but either have accepted mitigation for September reassessments or sat uncapped further first attempts in September will be required to take further attempts at the next opportunity. The next opportunity will usually be the following academic year at the normal time for the assessment or examination.

Students who have not met progression requirements following capped resits in September without mitigation will be required to withdraw.

2.2.3.1 Students Allowed to Proceed

You may be given an informal classification at the end of your first year; that classification is not official and will not form part of your transcript. It will, however, give you an idea of how you are progressing.

If you have been offered optional further attempts you will not be required to pass these to proceed to the following academic year. However, you may wish to take the optional further attempts to improve your transcript, the number of modules passed, year average, overall average, and potentially final degree classification.

2.3 Year 2 MORSE Course Regulations

2.3.1 Loading / Requirements

The minimum and normal load is **120 CATS**.

The maximum load is **150 CATS**.

Students must take the **core modules** and, in addition, students must select **at least 36 CATS from List A** and an appropriate number of List B / unusual option modules to reach the minimum load.

Students who wish to proceed on, or transfer to, the integrated Masters must take ST221.

It is **not permitted** to;

- take more than one of EC204, EC238 and EC239
- take more than one of IE3E1, EP304-15 and EP304-30
- take more than one of IB133, IB2D3 and ST335. It will not be possible to take ST335 in a later year if you have chosen IB133/IB2D3 in an earlier year.
- take more than 30 CATS of level 1 modules (modules with code xx1xx)
- take more than 30 CATS of unusual options

Other module restrictions may also apply as specified in module information pages.

Any modules not listed (including foreign languages) are classed as Unusual Options and permission to take these modules must be obtained with a completed Unusual Option form submitted to the support office by the specified deadline. Unusual options count towards your load but they do not count, under any circumstances, towards CATS requirements described in the course regulations where these regulations refer to Core Modules, Optional Modules, or letter Lists (e.g. List A, List B etc.). Further information about Unusual Options and deadlines can be found in the Unusual Options section of the handbook.

2.3.2 Core Modules

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Code	Name	CATS	Term
EC204	Economics 2	30	1, 2
	OR		
EC220	Mathematical Economics 1A	12	1
	OR		
EC238	Economics 2: Microeconomics	15	1
	OR		
EC239	Economics 2: Macroeconomics	15	2
IB207	Mathematical Programming II	12	1
ST202	Stochastic Processes	12	2
ST208	Mathematical Methods	12	1
ST218	Mathematical Statistics Part A	12	1
ST219	Mathematical Statistics Part B	12	2

It is permitted to take either EC220 or **one** of EC204, EC238, or EC239 as core (noting that it is not permitted to take more than one of EC204, EC238, and EC239). The modules can be taken as optional core modules or as List A modules subject to the requirement that one is taken as an optional core module (noting that it is not permitted to take a module as both optional core and List A).

2.3.3 List A

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
EC204	Economics 2	30	1, 2
EC220	Mathematical Economics 1A	12	1
EC221	Mathematical Economics 1B	12	2
EC238	Economics 2: Microeconomics	15	1
EC239	Economics 2: Macroeconomics	15	2
IB320	Simulation	15	2
MA222	Metric Spaces	12	2
MA250	Introduction to Partial Differential Equations	12	2
MA254	Theory of ODEs	12	2
MA258	Mathematical Analysis III	12	1
MA259	Multivariable Calculus	12	1
ST221	Linear Statistical Modelling	12	2, 3
ST222	Games, Decisions and Behaviour	12	1

2.3.4 List B

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Code	Name	CATS	Term
CS259	Formal Languages	15	2
CS260	Algorithms	15	1
CS262	Logic and Verification	15	2
EP304	Introduction to Secondary Mathematics Teaching	15	2
EP304	Introduction to Secondary Mathematics Education	30	2

Code	Name	CATS	Term
IB2D3	Accounting in Practice	15	1
IB2D5	Entrepreneurship in Practice	15	2
IB2D9	Finance in Practice	15	2
MA117	Programming for Scientists	10	2
MA209	Variational Principles	6	3
MA241	Combinatorics	12	1
MA243	Geometry	12	1
MA249	Algebra II: Groups and Rings	12	2
MA251	Algebra I: Advanced Linear Algebra	12	1
MA252	Combinatorial Optimization	12	2
MA256	Introduction to Systems Biology	6	3
MA257	Introduction to Number Theory	12	2
MA269	Asymptotics and Integral Transforms	12	2
PX282	Stars and the Solar System	15	1, 2

2.3.5 Notes on Course Regulations

When choosing optional modules please consider carefully which modules are pre-requisites for modules you wish to take in later years.

Some optional modules are only offered subject to availability. In particular, WBS normally restricts module pre-registrations for IB modules to 60 CATS for second year MORSE and MMORSE students.

ST221 Linear Statistical Modelling is a pre-requisite for ST404 Applied Statistical Modelling, which is a core module on all the streams of the Integrated Masters. If you wish to pursue the MMORSE degree you must take ST221 in your second year. Additionally ST221 is used in prioritisation rules for places on ST340 and ST344.

Students pursuing the MMORSE degree are encouraged to take MA258 Mathematical Analysis III and MA222 Metric Spaces, both of which lay the ground for several theoretical modules in the final two years of the integrated Masters.

EC238 and EC239 are the two halves of EC204; you may take either one of these independently but cannot take both as you should register for the whole module EC204 if you wish to take both halves. Please pay close attention to pre-requisites of EC3xx-coded modules when choosing second year modules in Economics, as they are strictly enforced. The Department of Economics provides a list of pre-requisite modules

Students who are thinking of transferring to the Mathematics & Statistics or Data Science degree should ensure they are taking modules which comply with the course regulations of the intended destination degree. See the Mathematics & Statistics handbook and Data Science handbook for further details.

Students taking both EC220 and EC204 are encouraged to take EC220 as optional core module and EC204 as List A module. If overloaded, this combination improves the possibility of dropping a module from List A in the year mark calculation.

2.3.6 Second Year Learning Outcomes

After completing the second year the students will have:

- Covered a range of material in mathematics, statistics, operations research and economics, and studied some of it in depth.
- Acquired sufficient knowledge and understanding to be in a position to make an informed choice of options in their final years and to have covered the background necessary to pursue these options.

2.4 Year 2 MORSE: Progression and Outcomes

2.4.1 Requirements for Progression

2.4.1.1 Students starting in or before 20/21

In order to progress to the third year of the degree programme you must;

1. Pass **at least 60 CATS of whole modules**

In order to progress to the third year of the MMORSE degree programme you must additionally have a first (I) or upper second (II.1) classification in Year 2.

If you are registered on the MMORSE degree programme and do not have a first or upper second classification you will be moved to the BSc MORSE programme.

2.4.1.2 Students starting in or after 21/22

In order to progress to the third year of the degree programme you must;

1. Have an overall year mark of 40 percent or more
2. Pass **at least 90 CATS of whole modules**

In order to progress to the third year of the MMORSE programme you must additionally have a have a first (I) or upper second (II.1) classification in Year 2.

If you are registered on the MSci MMORSE and do not have a first or upper second classification or more you will be moved to the BSc MORSE programme.

2.4.2 Outcomes from the Summer Examination Board for BSc MORSE

a. Permitted to proceed to third year of BSc MORSE
b. Permitted to proceed to third year of MORSE with optional further attempts
c. Required to take further attempts

2.4.3 Outcomes from the September Examination Board for BSc MORSE

The possible outcomes of the second year September examination board for BSc MORSE are as follows:

a. Permitted to proceed to third year of study
b. Required to take further attempts at next available opportunity
c. Required to withdraw

Students who have not met progression requirements but have either accepted mitigation for September reassessments or sat uncapped further first attempts in September will be required to take further attempts at the next opportunity. The next opportunity will usually be the following academic year at the normal time for the assessment or examination.

Students who have not met progression requirements following capped resits in September without mitigation will be required to withdraw. Students withdrawing after the end of their second year of studies may be eligible for an exit award.

2.4.4 Outcomes from the Summer Examination Board for MMORSE

The possible outcomes of the second year Summer examination board for MMORSE are as follows:

a. Permitted to proceed to third year of MMORSE
b. Permitted to proceed to third year of MMORSE with optional further attempts
c. Required to either take further attempts to progress to third year of MMORSE or transfer to BSc MORSE and permitted to proceed to third year
d. Transfer to BSc MORSE and permitted to proceed to third year
e. Required to take further attempts

Information about further attempts can be found in the examinations section of the handbook. Students who do not wish to take further attempts may choose to be considered for an exit qualification.

2.4.5 Outcomes from the September Examination Board for MMORSE

The possible outcomes of the second year September examination board for MMORSE are as follows:

a. Permitted to proceed to third year of MMORSE
b. Permitted to proceed to third year of BSc MORSE
c. Required to take further attempts at next available opportunity
d. Required to withdraw

Students who have not met progression requirements but have either accepted mitigation for September reassessments or sat uncapped further first attempts in September will be required to take further attempts at the next opportunity. The next opportunity will usually be the following academic year at the normal time for the assessment or examination.

Students who have not met progression requirements following capped resits in September without mitigation will be required to withdraw. Students withdrawing after the end of their second year of studies may be eligible for an exit award.

2.4.5.1 Students Allowed to Proceed

If you are allowed to proceed to the third year of study you may be provided with a classification, this is not official and will not form part of your transcript but will give you an idea of how you are progressing.

If you have been offered optional further attempts you will not be required to pass these to proceed to the following academic year. However, you may wish to take the optional further attempts to improve your transcript, the number of modules passed, year average, overall average, and potentially final degree classification.

You should be aware that the CATS passed in the second year form part of the requirement for the overall award:

2.4.5.1.1 Students starting in or before 20/21

- To qualify for a BSc Honours degree a candidate must pass, in the final two years contributing to the degree classification, whole modules equating to at least 168 credits in total, including at least 80 credits taken in the final year.
- To qualify for an Integrated Masters Honours degree a candidate must pass at least 258 CATS in Years 2-4 including at least 90 CATS in the final year.

2.4.5.1.2 Students starting in or after 21/22

- For both BSc and Integrated Masters students, the requirements will have been already satisfied if you are permitted to progress.

For more information about the required CATS on this see the university's undergraduate degree classification conventions.

2.5 Year 3 BSc MORSE Course Regulations

2.5.1 Loading / Requirements

The minimum and normal load is **120 CATS**.

The maximum load is **150 CATS**.

Students must select **at least 90 CATS from List A** and **at most 60 CATS from List B**.

Students must take, in their third year, **at least 90 CATS of level 3+ modules** given by the Departments of Economics, Mathematics, Statistics and Warwick Business School. (NB: Level 3 should be interpreted as: xx3xx)

It is **not permitted** to;

- take more than 30 CATS of unusual options

- take more than one of IB133, IB2D3 and ST335. Students will be de-registered from ST335 if IB133/IB2D3 was taken in a previous year.
- take more than one of IB211 and IB320. Students will be de-registered from IB320 if IB211 was taken in a previous year.
- take more than one of MA222 and MA260.
- take more than one of ST339, EC333 and IB253
- take more than one of ST339 and IB254
- take more than one of EC334 and IB254
- take more than one of ST342 and MA359
- take more than one of IE3E1, EP304-15 and EP304-30

Other module restrictions may also apply as specified in module information pages.

Any modules not listed (including foreign languages) are classed as Unusual Options and permission to take these modules must be obtained with a completed Unusual Option form submitted to the support office by the specified deadline. Unusual options count towards your load but they do not count, under any circumstances, towards CATS requirements described in the course regulations where these regulations refer to Core Modules, Optional Modules, or letter Lists (e.g. List A, List B etc.). Further information about Unusual Options and deadlines can be found in section 3.4 of the handbook.

2.5.2 List A

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration, and completion of pre-requisite modules. Pre-requisites are strictly enforced for EC-coded modules in particular, but you should always check with the department offering the module.

Code	Name	CATS	Term
EC301	Mathematical Economics 2: Dynamics, Uncertainty , Asymmetrical Information	15	2
EC306	Econometrics 2: Time Series	15	2
EC307	Macroeconomic Policy in the EU	15	2
EC312	International Economics	15	1
EC314	Topics in Economic Theory	15	2
EC331	Research in Applied Economics	30	1, 2
EC333	Topics in Financial Economics: Theories and International Finance	15	1
EC334	Topics in Financial Economics: Corporate Finance and Markets	15	2
EC338	Econometrics 2: Microeconometrics	15	1
EC341	Mathematical Economics 2: Mechanism Design and Alternative	15	1

Code	Name	CATS	Term
	Games		
IB320	Simulation	15	2
IB349	Operational Research for Strategic Planning	15	1
IB352	Applied Optimisation Methods	15	2
IB3A7	The Practice of Operational Research	15	2
IB3J2	Decision Making Under Uncertainty	15	1
IB3J3	Mathematical Game Theory (suspended in 22/23)	15	1
IB3K2	Financial Optimisation	15	2
MA359	Measure Theory	15	1
MA377	Rings and Modules	15	2
MA390	Topics in Mathematical Biology	15	1
MA398	Matrix Analysis and Algorithms	15	1
MA3A6	Algebraic Number Theory	15	1
MA3B8	Complex Analysis	15	1
MA3D1	Fluid Dynamics	15	2
MA3D4	Fractal Geometry	15	2
MA3D5	Galois Theory	15	2
MA3D9	Geometry of Curves and Surfaces	15	2
MA3E1	Groups and Representations	15	1
MA3F1	Introduction to Topology	15	1
MA3F2	Knot Theory (suspended in 22/23)	15	2
MA3G1	Theory of PDEs	15	2
MA3G6	Commutative Algebra	15	1
MA3G7	Functional Analysis I	15	1
MA3G8	Functional Analysis II	15	2
MA3H0	Numerical Analysis and PDEs	15	2
MA3H2	Markov Processes and Percolation Theory	15	2
MA3H3	Set Theory	15	1
MA3H7	Control Theory	15	2
MA3J2	Combinatorics II	15	1
MA3J9	Historical Challenges in Mathematics	15	1
MA3K0	High Dimensional Probability	15	1
MA3K1	Mathematics of Machine Learning	15	2
MA3K4	Introduction to Group Theory	15	1
ST301	Bayesian Statistics and Decision Theory	15	1

Code	Name	CATS	Term
ST305	Designed Experiments	15	2
ST313	Third Year Essay / Project (suspended in 22/23)	15	
ST318	Probability Theory	15	2
ST323	Multivariate Statistics	15	1
ST329	Topics in Statistics	15	2
ST332	Medical Statistics	15	2
ST333	Applied Stochastic Processes	15	1
ST337	Bayesian Forecasting and Intervention	15	2
ST339	Introduction to Mathematical Finance	15	1
ST340	Programming for Data Science	15	2
ST341	Statistical Genetics	15	2
ST342	Mathematics of Random Events	15	1
ST343	Topics in Data Science	15	2
ST344	Professional Practice of Data Analysis	15	1
ST346	Generalized Linear Models for Regression and Classification	15	1

2.5.3 List B

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
EC208	Industrial Economics 1: Market Structure	15	1
EC303	The British Economy in the Twentieth Century (suspended in 22/23)	15	1
EC310	Topics in Development Economics	15	2
EC313	The International Economy in the Twentieth Century	15	2
EC320	Economics of Public Policy	15	1
EC326	Industrial Economics 2: Strategy , Planning	15	2
EC336	International Trade	15	2
EC337	Industrial Economics 2: Market Economics, Competition , Regulation	15	1
EP304	Introduction to Secondary Mathematics Teaching	15	2
EP304	Introduction to Secondary Mathematics Education	30	2
IB253	Principles of Finance 1	15	1

Code	Name	CATS	Term
IB254	Principles of Finance 2	15	2
IB2C4	Managing Human Resources	15	1
IB2MKT	Marketing in Practice	15	1
IB337	Business Taxation	15	2
IB359	Derivatives and Risk Management	15	2
IB361	Equality and Diversity	15	1
IB368	International Business Strategy	15	2
IB370	Managing Strategy in the Digital Era	15	1
IB382	Project Management	15	1
IB384	Supply Chain Management	15	1
IB395	Finance in New Ventures	15	1
IB396	Financial Statement Analysis , Security Valuation	15	2
IB3D8	Corporate Strategy	15	1
IB3F2	Company Law	15	1
IB3J8	Banks and Financial Systems	15	1
MA222	Metric Spaces	12	2
MA241	Combinatorics	12	1
MA243	Geometry	12	1
MA249	Algebra II: Groups and Rings	12	2
MA250	Introduction to Partial Differential Equations	12	2
MA251	Algebra I: Advanced Linear Algebra	12	1
MA252	Combinatorial Optimization	12	2
MA256	Introduction to Systems Biology	6	3
MA257	Introduction to Number Theory	12	2
MA258	Mathematical Analysis III	12	1
MA259	Multivariable Calculus	12	1
MA269	Asymptotics and Integral Transforms	12	2
ST334	Actuarial Methods	15	1
ST335	Finance and Financial Reporting	15	1
ST338	Actuarial Models	15	2
ST345	Life Contingencies	15	2

2.5.4 Notes on Course Regulations

- Some optional modules are only offered subject to availability. For example, Economics modules do not run if the numbers are insufficient, so check with the

Economics Department. Also, WBS normally restricts module preregistrations for IB modules to 120 CATS for third year MORSE students.

- The Pathways in the MMathStat degree webpage also provides further examples of module combinations relevant for a career (including a PhD) in Financial Mathematics as well as other specialisations. However, be aware that the pathways suggested are for the MMathStat degree and so may not satisfy the course regulations for the MORSE or MMORSE degree.
- It is a student's responsibility to ensure that the modules they are following are permitted — either because the modules are given explicitly as options by the regulations or because permission has been sought and granted by filling in an unusual option form.
- From 2019/2020 onwards Statistics students should take MA222 Metric Spaces which is equivalent to MA260 Norms, Metrics and Topologies.
- From 2019/2020 onwards: IB211 has been replaced by IB320. Students who have already taken IB211 Simulation are not permitted to take IB320.

2.6 Year 3 BSc MORSE: Outcomes

2.6.1 Requirements for Award

2.6.1.1 Students starting in or before 20/21

To qualify for a **BSc Honours** degree a candidate must pass, in the final two years contributing to the degree classification, whole modules equating to **at least 168 CATS in total**, including **at least 80 CATS taken in the final year**. In addition they must have an overall degree mark of **greater than, or equal to, 40%** for an honours degree.

Students should note that in awarding one of the BSc degree classes a candidate must achieve marks in that class or higher in whole core and listed modules taken in the final year equating to at least 48 CATS points in total.

To qualify for a BSc pass degree a candidate must pass (at the 40% module pass mark) in the final two years, whole modules equating to at least 150 CATS in total, including at least 50 CATS taken in the final year. In addition they must have an overall degree mark of greater than, or equal to 35%.

2.6.1.2 Students starting in or after 21/22

To qualify for a BSc Honours degree a candidate must have been permitted to progress to their final year and passed **at least 270 credits in total**, including **at least 90 CATS of level 3+ modules**. (NB: Level 3+ should be interpreted as: xx3xx, xx4xx, xx5xx, xx9xx.) In addition they must have an overall degree mark of **greater than, or equal to, 40%** for an honours degree.

Students should note that in awarding one of the BSc degree classes a candidate must achieve marks in that class or higher in whole core and listed modules taken in the final year equating to at least 48 CATS points in total.

To qualify for a BSc pass degree a candidate must have studied at least 300 CATS and passed at least 240 CATS in total, including at least 60 CATS of level 3+ modules. In addition they must have an overall degree mark of greater than, or equal to 35%.

Further information about degree classification rules can be found at the university's undergraduate degree classification conventions pages.

2.6.1.3 For students entering in 19/20 or before

The pass mark for all modules is 40% or above.

2.6.1.4 For students entering in 20/21 or after

The pass mark for level 1/2/3 is 40% or above. The pass mark for level 4+ modules is 50% or above, irrespective of the academic year in which a module is taken. Level 4+ can be broadly interpreted as module codes xx4xx, xx5xx, xx9xx, however the module catalogue should be consulted as the definitive guide.

2.6.2 Outcomes from the Summer Examination Board

The possible outcomes of the third year Summer examination board for BSc MORSE are as follows: a. Graduate with BSc honours b. Graduate with BSc honours with optional further attempts c. Required to take further attempts

Students may choose whether to take optional further attempts but should note that graduation will be delayed if the assessments are taken. Taking optional further attempts could however improve the transcript, the number of modules passed, year average, overall average, and potentially final degree classification.

Students who have not met requirements for an honours degree will be entered for further assessments. Students who are eligible may choose to be awarded a pass degree or exit qualification instead of taking further attempts.

2.6.3 Outcomes from the September Examination Board

The possible outcomes of the third year September examination board for BSc MORSE are as follows: a. Graduate with BSc honours b. Graduate with BSc pass degree c. Required to take further attempts d. Required to withdraw

Students who have not met requirements for the award of a BSc honours or BSc pass degree but have either accepted mitigation for September reassessments or sat uncapped further first attempts in September will be required to take further attempts at the next opportunity. The next opportunity will usually be the following academic year at the normal time for the assessment or examination.

Students who have not met requirements after sitting capped resits and do not have accepted mitigation will be required to withdraw. Students who are required to withdraw may be eligible for an exit qualification.

2.7 Year 3 MMORSE Course Regulations: All Streams

2.7.1 Loading / Requirements

The minimum and normal load in the third year is **120 CATS**.

The maximum load is **150 CATS**.

Students must take, over their third and fourth years, **at least 210 CATS of level 3+ modules** given by the Departments of Economics, Mathematics, Statistics and Warwick Business School, including **at least 120 CATS of level 4+ modules** from these same departments. Additionally, At least **90 CATS of level 4+ modules must be taken in the fourth year**, though modules from other departments may be counted in this requirement. (NB: Level 3+ should be interpreted as: xx3xx, xx4xx, xx5xx, xx9xx. Level 4+ should be interpreted as: xx4xx, xx5xx, xx9xx)

There are **additional requirements for each stream** which must also be satisfied.

Unusual options do not count towards requirements for CATS from specified lists.

It is **not permitted** to;

- take more than 30 CATS of unusual options
- take more than one of IB133, IB2D3 and ST335. Students will be de-registered from ST335 if IB133/IB2D3 was taken in a previous year.
- Take more than one of IB320 and IB211. Students will be de-registered from IB320 if IB211 was taken in a previous year.
- take more than one of ST339, EC333 and IB253
- take more than one of ST339 and IB254
- take more than one of EC334 and IB254
- take more than one of ST342 and MA359
- take more than one of IE3E1, EP304-15 and EP304-30
- take more than one of ST337/ST405 and IB98E
- take the level 3 and level 4 version of the same module
- take module combinations from different streams in year 3 and year 4. Stream transfers are permitted at any time but the module choices must satisfy the requirements for a single stream in both years.

Other module restrictions may also apply as specified in module information pages.

Any modules not listed (including foreign languages) are classed as Unusual Options and permission to take these modules must be obtained with a completed Unusual Option form submitted to the support office by the specified deadline. Unusual options count towards your load but they do not count, under any circumstances, towards CATS requirements described in the course regulations where these regulations refer to Core Modules, Optional Modules, or letter Lists (e.g. List A, List B etc.). Further information about Unusual Options and deadlines can be found in section 3.4 of the handbook.

2.7.2 Notes on Course Regulations

- Students entering in 2020/2021 and later will not be permitted to take Level 2 modules in their fourth year (Note, Level 2 should be interpreted as xx2xx).
- Some optional modules are only offered subject to availability. For example, Economics modules do not run if the numbers are insufficient, so check with the Economics Department. Also, WBS normally restricts module preregistrations for IB modules to 120 CATS for third year MORSE students.
- Certain third and final year options have prerequisites which are not in the compulsory component of the second year. It is the responsibility of each student to be in a position to understand the modules chosen.
- It is a student's responsibility to ensure that the modules they are following are permitted — either because the modules are given explicitly as options by the regulations or because permission has been sought and granted by filling in an unusual option form.
- You will want to consider possible choices of fourth year options when choosing your third year options. You should bear in mind that the module positions (whether they are in Term 1 or 2) do vary slightly from year to year and the positions will not necessarily be the same next year.
- You are not allowed to take both the level 3 and level 4 version of the same module, e.g. ST323 Multivariate Statistics in Year 3 and then ST412 Multivariate Statistics with Advanced Topics in Year 4.
- The Pathways in the MMathStat degree webpage also provides further examples of module combinations relevant for a career (including a PhD) in Financial Mathematics as well as other specialisations. However, be aware that the pathways suggested are for the MMathStat degree and so may not satisfy the course regulations for the MORSE or MMORSE degree.
- From 2019/2020 onwards Statistics students should take MA222 Metric Spaces which is equivalent to MA260 Norms, Metrics and Topologies.

2.8 Year 3 MMORSE Actuarial and Financial Mathematics Course Regulations

Objective: To provide students with a sound theoretical and practical basis for careers and research in financial mathematics and to prepare students for an actuarial career.

Syllabus: This comprises three interlocking strands:

- Background knowledge on financial institutions and financial instruments.
- Construction and analysis of financial models - these models are predominantly stochastic so that the key techniques are probability, time series modelling and stochastic processes.
- Analysis of financial data: the key techniques are regression and linear models, multivariate data analysis, time series & forecasting, and risk analysis

2.8.1 Loading / Requirements

These requirements are **in addition** to the course regulations for all streams of MMORSE which must also be satisfied.

Students must take the core modules, **at least 15 CATS from List A** and **at least 30 CATS from List B**. In addition students must choose an appropriate number of modules from List A, List B, Optional Modules and Unusual Options to reach the minimum load.

2.8.2 Core

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Code	Name	CATS	Term
ST318	Probability Theory	15	2
ST339	Introduction to Mathematical Finance	15	1
ST404	Applied Statistical Modelling	15	2
ST342	Mathematics of Random Events	15	1
	OR		
MA359	Measure Theory	15	1

2.8.3 List A

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
EC306	Econometrics 2: Time Series	15	2
EC338	Econometrics 2: Microeconometrics	15	1
IB352	Applied Optimisation Methods	15	2
IB3K2	Financial Optimisation	15	2
MA3H0	Numerical Analysis and PDEs	15	2
ST334	Actuarial Methods	15	1
ST335	Finance and Financial Reporting	15	1
ST338	Actuarial Models	15	2
ST345	Life Contingencies	15	2

2.8.4 List B

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
ST301	Bayesian Statistics and Decision Theory	15	1
ST323	Multivariate Statistics	15	1
ST333	Applied Stochastic Processes	15	1
ST337	Bayesian Forecasting and Intervention	15	2
ST344	Professional Practice of Data Analysis	15	1
ST346	Generalized Linear Models for Regression and Classification	15	1
ST405	Bayesian Forecasting and Intervention with Advanced Topics	15	2
ST406	Applied Stochastic Processes with Advanced Topics	15	1
ST412	Multivariate Statistics with Advanced Topics	15	1
ST413	Bayesian Statistics and Decision Theory with Advanced Topics	15	1

2.8.5 Optional Modules

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Optional modules are subject to change from year to year and some modules may be subject to availability / module preregistration.

For students who entered before 2020/2021: Option modules that do not require an unusual option form are those listed in any stream of the third or fourth year of any MMORSE stream or in the third year of BSc MORSE.

For students who entered in or after 2020/2021: Option modules that do not require an unusual option form are those listed in any stream of the third year of any MMORSE stream or BSc MORSE.

An illustrative table of modules that may be listed in other MORSE streams / programmes is shown below.

This was taken at a single snapshot in time - it is not a definitive guide and students are required to check that these modules are still listed in other streams / programmes.

Code	Name	CATS	Term	Source
EC208	Industrial Economics 1: Market	15	1	G30B year 3, Y602 year

Code	Name	CATS	Term	Source
	Structure			3
EC301	Mathematical Economics 2: Dynamics, Uncertainty , Asymmetrical Information	15	2	G30B year 3, G30B year 4, Y602 year 3
EC303	The British Economy in the Twentieth Century (suspended in 22/23)	15	1	G30B year 3, Y602 year 3
EC307	Macroeconomic Policy in the EU	15	2	G30B year 3, Y602 year 3
EC310	Topics in Development Economics	15	2	G30B year 3, Y602 year 3
EC312	International Economics	15	1	G30B year 3, Y602 year 3
EC313	The International Economy in the Twentieth Century	15	2	Y602 year 3
EC314	Topics in Economic Theory	15	2	G30B year 3, G30B year 4, Y602 year 3
EC320	Economics of Public Policy	15	1	Y602 year 3
EC326	Industrial Economics 2: Strategy , Planning	15	2	Y602 year 3
EC331	Research in Applied Economics	30	1, 2	G30B year 3, Y602 year 3
EC333	Topics in Financial Economics: Theories and International Finance	15	1	G30B year 3, G30B year 4, Y602 year 3
EC334	Topics in Financial Economics: Corporate Finance and Markets	15	2	G30B year 3, G30B year 4, Y602 year 3
EC336	International Trade	15	2	Y602 year 3
EC337	Industrial Economics 2: Market Economics, Competition , Regulation	15	1	Y602 year 3
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15	1	G30B year 3, G30B year 4, Y602 year 3
EC901	Microeconomics A	30	1	G30B year 4
	OR			
EC9D3	Microeconomics B	30	1	G30B year 4
EC910	Quantitative Methods: Econometrics B	45	1, 2	G30B year 4
EC924	Monetary Economics	15	2	G30B year 4
EC931	International Trade	15	2	G30B year 4
EC941	Game Theory	15	2	G30B year 4
EC943	Industrial Economics	15	2	G30B year 4
EC9D4	Macroeconomics A	30	1	G30B year 4

Code	Name	CATS	Term	Source
	OR			
EC9D5	Macroeconomics B	30	1	G30B year 4
EP304	Introduction to Secondary Mathematics Teaching	15	2	Y602 year 3
EP304	Introduction to Secondary Mathematics Education	30	2	Y602 year 3
IB253	Principles of Finance 1	15	1	Y602 year 3
IB254	Principles of Finance 2	15	2	Y602 year 3
IB2C4	Managing Human Resources	15	1	Y602 year 3
IB2MKT	Marketing in Practice	15	1	Y602 year 3
IB320	Simulation	15	2	G30C year 3, Y602 year 3
IB337	Business Taxation	15	2	Y602 year 3
IB349	Operational Research for Strategic Planning	15	1	G30C year 3, G30C year 4, Y602 year 3
IB357	Investment Management	15	1	G30A year 4
IB359	Derivatives and Risk Management	15	2	Y602 year 3
IB361	Equality and Diversity	15	1	Y602 year 3
IB368	International Business Strategy	15	2	Y602 year 3
IB370	Managing Strategy in the Digital Era	15	1	Y602 year 3
IB382	Project Management	15	1	Y602 year 3
IB384	Supply Chain Management	15	1	Y602 year 3
IB395	Finance in New Ventures	15	1	Y602 year 3
IB396	Financial Statement Analysis , Security Valuation	15	2	Y602 year 3
IB3A7	The Practice of Operational Research	15	2	G30C year 3, G30C year 4, Y602 year 3
IB3D8	Corporate Strategy	15	1	Y602 year 3
IB3F2	Company Law	15	1	Y602 year 3
IB3J2	Decision Making Under Uncertainty	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J3	Mathematical Game Theory (suspended in 22/23)	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J8	Banks and Financial Systems	15	1	Y602 year 3
IB408	Operational Research for Strategic Planning with Advanced Topics	15	1	G30C year 4
IB410	Mathematical Game Theory with	15	1	G30C year 4

Code	Name	CATS	Term	Source
	Advanced Topics (suspended in 22/23)			
IB411	Decision Making Under Uncertainty with Advanced Topics	15	1	G30C year 3, G30C year 4
IB9BS	Supply Chain Analytics	15	2	G30C year 4
IB9BW	Analytics in Practice	15	1	G30C year 4
IB98E	Forecasting	15	2	G30C year 4
IB9EO	Pricing Analytics (suspended in 22/23)	15	2	G30C year 4
IB9HP	Data Management	15	2	G30C year 4
MA222	Metric Spaces	12	2	G30D year 3, Y602 year 3
MA241	Combinatorics	12	1	G30D year 3, Y602 year 3
MA243	Geometry	12	1	G30D year 3, Y602 year 3
MA249	Algebra II: Groups and Rings	12	2	G30D year 3, Y602 year 3
MA250	Introduction to Partial Differential Equations	12	2	G30D year 3, Y602 year 3
MA251	Algebra I: Advanced Linear Algebra	12	1	G30D year 3, Y602 year 3
MA252	Combinatorial Optimization	12	2	G30D year 3, Y602 year 3
MA256	Introduction to Systems Biology	6	3	G30D year 3, Y602 year 3
MA257	Introduction to Number Theory	12	2	G30D year 3, Y602 year 3
MA258	Mathematical Analysis III	12	1	G30D year 3, Y602 year 3
MA259	Multivariable Calculus	12	1	G30D year 3, Y602 year 3
MA269	Asymptotics and Integral Transforms	12	2	G30D year 3, Y602 year 3
MA377	Rings and Modules	15	2	G30D year 3, G30D year 4, Y602 year 3
MA390	Topics in Mathematical Biology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA398	Matrix Analysis and Algorithms	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3A6	Algebraic Number Theory	15	1	G30D year 3, G30D

Code	Name	CATS	Term	Source
				year 4, Y602 year 3
MA3B8	Complex Analysis	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3D1	Fluid Dynamics	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D4	Fractal Geometry	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D5	Galois Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D9	Geometry of Curves and Surfaces	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3E1	Groups and Representations	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F1	Introduction to Topology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F2	Knot Theory (suspended in 22/23)	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G1	Theory of PDEs	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G6	Commutative Algebra	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3G7	Functional Analysis I	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3G8	Functional Analysis II	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H2	Markov Processes and Percolation Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H3	Set Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3H5	Manifolds	15	1	G30D year 3, G30D year 4
MA3H6	Algebraic Topology	15	2	G30D year 3, G30D year 4
MA3H7	Control Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3J2	Combinatorics II	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3J9	Historical Challenges in Mathematics	15	1	G30D year 3, G30D year 4, Y602 year 3

Code	Name	CATS	Term	Source
MA3K0	High Dimensional Probability	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K1	Mathematics of Machine Learning	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3K4	Introduction to Group Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA424	Dynamical Systems	15	1	G30D year 4
MA426	Elliptic Curves	15	2	G30D year 4
MA427	Ergodic Theory	15	2	G30D year 4
MA433	Fourier Analysis	15	1	G30D year 4
MA453	Lie Algebras	15	1	G30D year 4
MA475	Riemann Surfaces (suspended in 22/23)	15	2	G30D year 4
MA4A2	Advanced PDEs	15	1	G30D year 4
MA4A5	Algebraic Geometry	15	1	G30D year 4
MA4A7	Quantum Mechanics: Basic Principles and Probabilistic Methods	15	1	G30D year 4
MA4C0	Differential Geometry	15	1	G30D year 4
MA4E0	Lie Groups	15	1	G30D year 4
MA4E7	Population Dynamics: Ecology and Epidemiology	15	2	G30D year 4
MA4H4	Geometric Group Theory	15	1	G30D year 4
MA4H8	Ring Theory	15	2	G30D year 4
MA4H9	Modular Forms	15	2	G30D year 4
MA4J0	Advanced Real Analysis	15	2	G30D year 4
MA4J1	Continuum Mechanics	15	1	G30D year 4
MA4J3	Graph Theory	15	1	G30D year 4
MA4L2	Statistical Mechanics	15	2	G30D year 4
MA4M1	Epidemiology by Example	15	2	G30D year 4
MA4M2	Mathematics of Inverse Problems	15	2	G30D year 4
ST305	Designed Experiments	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST313	Third Year Essay / Project (suspended in 22/23)	15		Y602 year 3
ST329	Topics in Statistics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602

Code	Name	CATS	Term	Source
				year 3
ST332	Medical Statistics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST340	Programming for Data Science	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST341	Statistical Genetics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST343	Topics in Data Science	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST401	Stochastic Methods in Finance	15	1	G30C year 4, G30D year 4
ST402	Risk Theory	15	2	G30C year 4, G30D year 4
ST403	Brownian Motion	15	2	G30C year 4, G30D year 4
ST407	Monte Carlo Methods	15	1	G30C year 4, G30D year 4
ST409	Medical Statistics with Advanced Topics	15	2	G30C year 4, G30D year 3, G30D year 4
ST410	Designed Experiments with Advanced Topics	15	2	G30C year 4, G30D year 3, G30D year 4
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1	G30C year 4, G30D year 4
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2	G30C year 4, G30D year 4
ST417	Topics in Applied Probability (suspended in 22/23)	15	3	G30C year 4, G30D year 4
ST418	Statistical Genetics with Advanced Topics	15	2	G30C year 4, G30D year 3, G30D year 4
ST419	Advanced Topics in Data Science	15	2	G30C year 4, G30D year 3, G30D year 4
ST420	Statistical Learning and Big Data	15	2	G30C year 4, G30D year 4
ST909	Applications of Stochastic Calculus for Finance	15	2	G30B year 4, G30C year 4, G30D year 4
ST958	Advanced Trading Strategies	15	2	G30C year 4, G30D year

Code	Name	CATS	Term	Source
				4

The teaching term shown is for information only and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

2.9 Year 3 MMORSE Econometrics and Mathematical Economics Course Regulations

Objective: To prepare students for careers in econometrics, economic consultancy, and research in quantitative economics.

Syllabus: A combination of courses on economics, mathematical models in economics, and the analysis of economic data. The key techniques are differential equations, optimisation, probability, game theory, stochastic processes, regression, time series and forecasting, and multivariate data analysis.

2.9.1 Loading / Requirements

These requirements are **in addition** to the course regulations for all streams of MMORSE which must also be satisfied.

Students must take the core modules and **at least 45 CATS from List C**. In addition students must choose an appropriate number of modules from List C, Optional Modules and Unusual Options to reach the minimum load.

2.9.2 Core

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Code	Name	CATS	Term
ST404	Applied Statistical Modelling	15	2
ST323	Multivariate Statistics	15	1
	OR		
ST412	Multivariate Statistics with Advanced Topics	15	1
EC306	Econometrics 2: Time Series	15	2
	OR		
EC338	Econometrics 2: Microeconometrics	15	1

Both EC306 and EC338 may be selected , with one selected from the Core List and the other from Option List C.

2.9.3 List C

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
EC208	Industrial Economics 1: Market Structure	15	1
EC301	Mathematical Economics 2: Dynamics, Uncertainty , Asymmetrical Information	15	2
EC303	The British Economy in the Twentieth Century (suspended in 22/23)	15	1
EC306	Econometrics 2: Time Series	15	2
EC307	Macroeconomic Policy in the EU	15	2
EC310	Topics in Development Economics	15	2
EC312	International Economics	15	1
EC314	Topics in Economic Theory	15	2
EC331	Research in Applied Economics	30	1, 2
EC333	Topics in Financial Economics: Theories and International Finance	15	1
EC334	Topics in Financial Economics: Corporate Finance and Markets	15	2
EC338	Econometrics 2: Microeconometrics	15	1
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15	1
ST318	Probability Theory	15	2

2.9.4 Optional Modules

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Optional modules are subject to change from year to year and some modules may be subject to availability / module preregistration.

For students who entered before 2020/2021: Optional modules that do not require an unusual option form are those listed in any stream of the third or fourth year of any MMORSE stream or in the third year of BSc MORSE.

For students who entered in or after 2020/2021: Optional modules that do not require an unusual option form are those listed in any stream of the third year of any MMORSE stream or BSc MORSE.

An illustrative table of modules that may be listed in other MORSE streams / programmes is shown below.

This was taken at a single snapshot in time - it is not a definitive guide and students are required to check that these modules are still listed in other streams / programmes.

Code	Name	CATS	Term	Source
EC313	The International Economy in the Twentieth Century	15	2	Y602 year 3
EC320	Economics of Public Policy	15	1	Y602 year 3
EC326	Industrial Economics 2: Strategy , Planning	15	2	Y602 year 3
EC336	International Trade	15	2	Y602 year 3
EC337	Industrial Economics 2: Market Economics, Competition , Regulation	15	1	Y602 year 3
EC910	Quantitative Methods: Econometrics B	45	1, 2	G30A year 4
EP304	Introduction to Secondary Mathematics Teaching	15	2	Y602 year 3
EP304	Introduction to Secondary Mathematics Education	30	2	Y602 year 3
IB253	Principles of Finance 1	15	1	Y602 year 3
IB254	Principles of Finance 2	15	2	Y602 year 3
IB2C4	Managing Human Resources	15	1	Y602 year 3
IB2MKT	Marketing in Practice	15	1	Y602 year 3
IB320	Simulation	15	2	G30C year 3, Y602 year 3
IB337	Business Taxation	15	2	Y602 year 3
IB349	Operational Research for Strategic Planning	15	1	G30C year 3, G30C year 4, Y602 year 3
IB352	Applied Optimisation Methods	15	2	G30A year 3, G30C year 3, Y602 year 3
IB357	Investment Management	15	1	G30A year 4
IB359	Derivatives and Risk Management	15	2	G30A year 4, Y602 year 3
IB361	Equality and Diversity	15	1	Y602 year 3
IB368	International Business Strategy	15	2	Y602 year 3
IB370	Managing Strategy in the Digital Era	15	1	Y602 year 3
IB382	Project Management	15	1	Y602 year 3
IB384	Supply Chain Management	15	1	Y602 year 3

Code	Name	CATS	Term	Source
IB394	International Finance Management	15	1	G30A year 4
IB395	Finance in New Ventures	15	1	Y602 year 3
IB396	Financial Statement Analysis , Security Valuation	15	2	Y602 year 3
IB3A7	The Practice of Operational Research	15	2	G30C year 3, G30C year 4, Y602 year 3
IB3D8	Corporate Strategy	15	1	Y602 year 3
IB3F2	Company Law	15	1	Y602 year 3
IB3J2	Decision Making Under Uncertainty	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J3	Mathematical Game Theory (suspended in 22/23)	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J8	Banks and Financial Systems	15	1	Y602 year 3
IB3K2	Financial Optimisation	15	2	G30A year 3, G30C year 3, G30C year 4, Y602 year 3
IB408	Operational Research for Strategic Planning with Advanced Topics	15	1	G30C year 4
IB410	Mathematical Game Theory with Advanced Topics (suspended in 22/23)	15	1	G30C year 4
IB411	Decision Making Under Uncertainty with Advanced Topics	15	1	G30C year 3, G30C year 4
IB9BS	Supply Chain Analytics	15	2	G30C year 4
IB9BW	Analytics in Practice	15	1	G30C year 4
IB98E	Forecasting	15	2	G30C year 4
IB9EO	Pricing Analytics (suspended in 22/23)	15	2	G30C year 4
IB9HP	Data Management	15	2	G30C year 4
MA222	Metric Spaces	12	2	G30D year 3, Y602 year 3
MA241	Combinatorics	12	1	G30D year 3, Y602 year 3
MA243	Geometry	12	1	G30D year 3, Y602 year 3
MA249	Algebra II: Groups and Rings	12	2	G30D year 3, Y602 year 3
MA250	Introduction to Partial Differential Equations	12	2	G30D year 3, Y602 year 3
MA251	Algebra I: Advanced Linear	12	1	G30D year 3, Y602 year 3

Code	Name	CATS	Term	Source
	Algebra			
MA252	Combinatorial Optimization	12	2	G30D year 3, Y602 year 3
MA256	Introduction to Systems Biology	6	3	G30D year 3, Y602 year 3
MA257	Introduction to Number Theory	12	2	G30D year 3, Y602 year 3
MA258	Mathematical Analysis III	12	1	G30D year 3, Y602 year 3
MA259	Multivariable Calculus	12	1	G30D year 3, Y602 year 3
MA269	Asymptotics and Integral Transforms	12	2	G30D year 3, Y602 year 3
MA359	Measure Theory	15	1	G30A year 3, G30D year 3, Y602 year 3
MA377	Rings and Modules	15	2	G30D year 3, G30D year 4, Y602 year 3
MA390	Topics in Mathematical Biology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA398	Matrix Analysis and Algorithms	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3A6	Algebraic Number Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3B8	Complex Analysis	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3D1	Fluid Dynamics	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D4	Fractal Geometry	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D5	Galois Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D9	Geometry of Curves and Surfaces	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3E1	Groups and Representations	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F1	Introduction to Topology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F2	Knot Theory (suspended in 22/23)	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G1	Theory of PDEs	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G6	Commutative Algebra	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3G7	Functional Analysis I	15	1	G30D year 3, G30D year 4,

Code	Name	CATS	Term	Source
				Y602 year 3
MA3G8	Functional Analysis II	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H0	Numerical Analysis and PDEs	15	2	G30A year 3, G30D year 3, G30D year 4, Y602 year 3
MA3H2	Markov Processes and Percolation Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H3	Set Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3H5	Manifolds	15	1	G30D year 3, G30D year 4
MA3H6	Algebraic Topology	15	2	G30D year 3, G30D year 4
MA3H7	Control Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3J2	Combinatorics II	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3J9	Historical Challenges in Mathematics	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K0	High Dimensional Probability	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K1	Mathematics of Machine Learning	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3K4	Introduction to Group Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA424	Dynamical Systems	15	1	G30D year 4
MA426	Elliptic Curves	15	2	G30D year 4
MA427	Ergodic Theory	15	2	G30D year 4
MA433	Fourier Analysis	15	1	G30D year 4
MA453	Lie Algebras	15	1	G30D year 4
MA475	Riemann Surfaces (suspended in 22/23)	15	2	G30D year 4
MA482	Stochastic Analysis	15	2	G30A year 4, G30D year 4
MA4A2	Advanced PDEs	15	1	G30D year 4
MA4A5	Algebraic Geometry	15	1	G30D year 4
MA4A7	Quantum Mechanics: Basic Principles and Probabilistic Methods	15	1	G30D year 4
MA4C0	Differential Geometry	15	1	G30D year 4
MA4E0	Lie Groups	15	1	G30D year 4

Code	Name	CATS	Term	Source
MA4E7	Population Dynamics: Ecology and Epidemiology	15	2	G30D year 4
MA4H4	Geometric Group Theory	15	1	G30D year 4
MA4H8	Ring Theory	15	2	G30D year 4
MA4H9	Modular Forms	15	2	G30D year 4
MA4J0	Advanced Real Analysis	15	2	G30D year 4
MA4J1	Continuum Mechanics	15	1	G30D year 4
MA4J3	Graph Theory	15	1	G30D year 4
MA4L2	Statistical Mechanics	15	2	G30D year 4
MA4L8	Numerical Analysis and Nonlinear PDEs (suspended in 22/23)	15	2	G30A year 4, G30D year 4
MA4M1	Epidemiology by Example	15	2	G30D year 4
MA4M2	Mathematics of Inverse Problems	15	2	G30D year 4
ST301	Bayesian Statistics and Decision Theory	15	1	G30A year 3, G30C year 3, G30D year 3, G30D year 4, Y602 year 3
ST305	Designed Experiments	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST313	Third Year Essay / Project (suspended in 22/23)	15		Y602 year 3
ST329	Topics in Statistics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST332	Medical Statistics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST333	Applied Stochastic Processes	15	1	G30A year 3, G30D year 3, Y602 year 3
ST334	Actuarial Methods	15	1	Y602 year 3, G30A year 3
ST335	Finance and Financial Reporting	15	1	G30A year 3, Y602 year 3
ST337	Bayesian Forecasting and Intervention	15	2	G30A year 3, G30A year 4, G30D year 3, Y602 year 3
ST338	Actuarial Models	15	2	Y602 year 3, G30A year 3
ST339	Introduction to Mathematical Finance	15	1	G30A year 3, Y602 year 3
ST340	Programming for Data Science	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST341	Statistical Genetics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST342	Mathematics of Random Events	15	1	G30A year 3, G30D year 3,

Code	Name	CATS	Term	Source
				Y602 year 3
ST343	Topics in Data Science	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST344	Professional Practice of Data Analysis	15	1	G30A year 3, Y602 year 3
ST345	Life Contingencies	15	2	Y602 year 3, G30A year 3
ST346	Generalized Linear Models for Regression and Classification	15	1	Y602 year 3, G30A year 3, G30A year 4, G30D year 4, G30C year 3, G30C year 4
ST401	Stochastic Methods in Finance	15	1	G30A year 4, G30C year 4, G30D year 4
ST402	Risk Theory	15	2	G30A year 4, G30C year 4, G30D year 4
ST403	Brownian Motion	15	2	G30A year 4, G30C year 4, G30D year 4
ST405	Bayesian Forecasting and Intervention with Advanced Topics	15	2	G30A year 3, G30A year 4, G30D year 3, G30D year 4
ST406	Applied Stochastic Processes with Advanced Topics	15	1	G30A year 3, G30A year 4, G30C year 4, G30D year 3, G30D year 4
ST407	Monte Carlo Methods	15	1	G30C year 4, G30D year 4
ST409	Medical Statistics with Advanced Topics	15	2	G30A year 4, G30C year 4, G30D year 3, G30D year 4
ST410	Designed Experiments with Advanced Topics	15	2	G30A year 4, G30C year 4, G30D year 3, G30D year 4
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1	G30A year 4, G30C year 4, G30D year 4
ST413	Bayesian Statistics and Decision Theory with Advanced Topics	15	1	G30A year 3, G30A year 4, G30C year 3, G30D year 3, G30D year 4
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2	G30A year 4, G30C year 4, G30D year 4
ST417	Topics in Applied Probability (suspended in 22/23)	15	3	G30C year 4, G30D year 4, G30A year 4
ST418	Statistical Genetics with Advanced Topics	15	2	G30C year 4, G30D year 3, G30D year 4
ST419	Advanced Topics in Data Science	15	2	G30C year 4, G30D year 3, G30D year 4

Code	Name	CATS	Term	Source
ST420	Statistical Learning and Big Data	15	2	G30A year 4, G30C year 4, G30D year 4
ST909	Applications of Stochastic Calculus for Finance	15	2	G30B year 4, G30C year 4, G30D year 4
ST958	Advanced Trading Strategies	15	2	G30C year 4, G30D year 4

2.10 Year 3 MMORSE Operational Research and Statistics Course Regulations

Objective: To prepare students for employment as management scientists and for research in Operational Research (OR).

Syllabus: This covers mathematical techniques in OR, the design and organisation of information systems, and the analysis of production and management information. The key techniques include mathematical programming, simulation, applied probability, decision theory, regression, time series and forecasting, multivariate data analysis, and the design and analysis of experiments.

2.10.1 Loading / Requirements

These requirements are **in addition** to the course regulations for all streams of MMORSE which must also be satisfied.

Students must take the core modules and **at least 15 CATS from List D**. In addition students must choose an appropriate number of modules from List D, Optional Modules and Unusual Options to reach the minimum load.

2.10.2 Core

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Code	Name	CATS	Term
ST404	Applied Statistical Modelling	15	2
ST301	Bayesian Statistics and Decision Theory	15	1
	OR		
ST413	Bayesian Statistics and Decision Theory with Advanced Topics	15	1
ST323	Multivariate Statistics	15	1
	OR		
ST412	Multivariate Statistics with Advanced Topics	15	1
IB320	Simulation	15	2
IB352	Applied Optimisation Methods	15	2

If IB320 has been taken in year 2, this is understood to fulfil the course regulations for year 3.

2.10.3 List D

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
IB349	Operational Research for Strategic Planning	15	1
IB3A7	The Practice of Operational Research	15	2
IB3J2	Decision Making Under Uncertainty	15	1
IB3J3	Mathematical Game Theory (suspended in 22/23)	15	1
IB3K2	Financial Optimisation	15	2
IB408	Operational Research for Strategic Planning with Advanced Topics	15	1
IB410	Mathematical Game Theory with Advanced Topics (suspended in 22/23)	15	1
IB411	Decision Making Under Uncertainty with Advanced Topics	15	1

2.10.4 Optional Modules

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Optional modules are subject to change from year to year and some modules may be subject to availability / module preregistration.

For students who entered before 2020/2021: Optional modules that do not require an unusual option form are those listed in any stream of the third or fourth year of any MMORSE stream or in the third year of BSc MORSE.

For students who entered in or after 2020/2021: Optional modules that do not require an unusual option form are those listed in any stream of the third year of any MMORSE stream or BSc MORSE.

An illustrative table of modules that may be listed in other MORSE streams / programmes is shown below.

This was taken at a single snapshot in time - it is not a definitive guide and students are required to check that these modules are still listed in other streams / programmes.

Code	Name	CATS	Term	Source

Code	Name	CATS	Term	Source
EC208	Industrial Economics 1: Market Structure	15	1	G30B year 3, Y602 year 3
EC301	Mathematical Economics 2: Dynamics, Uncertainty , Asymmetrical Information	15	2	G30B year 3, G30B year 4, Y602 year 3
EC303	The British Economy in the Twentieth Century (suspended in 22/23)	15	1	G30B year 3, Y602 year 3
EC306	Econometrics 2: Time Series	15	2	G30A year 3, G30A year 4, G30B year 3, G30B year 4, Y602 year 3
EC307	Macroeconomic Policy in the EU	15	2	G30B year 3, Y602 year 3
EC310	Topics in Development Economics	15	2	G30B year 3, Y602 year 3
EC312	International Economics	15	1	G30B year 3, Y602 year 3
EC313	The International Economy in the Twentieth Century	15	2	Y602 year 3
EC314	Topics in Economic Theory	15	2	G30B year 3, G30B year 4, Y602 year 3
EC320	Economics of Public Policy	15	1	Y602 year 3
EC326	Industrial Economics 2: Strategy , Planning	15	2	Y602 year 3
EC331	Research in Applied Economics	30	1, 2	G30B year 3, Y602 year 3
EC333	Topics in Financial Economics: Theories and International Finance	15	1	G30B year 3, G30B year 4, Y602 year 3
EC334	Topics in Financial Economics: Corporate Finance and Markets	15	2	G30B year 3, G30B year 4, Y602 year 3
EC336	International Trade	15	2	Y602 year 3
EC337	Industrial Economics 2: Market Economics, Competition , Regulation	15	1	Y602 year 3
EC338	Econometrics 2: Microeconometrics	15	1	G30A year 3, G30A year 4, G30B year 3, G30B year 4, Y602 year 3
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15	1	G30B year 3, G30B year 4, Y602 year 3
EC901	Microeconomics A	30	1	G30B year 4
	OR			
EC9D3	Microeconomics B	30	1	G30B year 4

Code	Name	CATS	Term	Source
EC910	Quantitative Methods: Econometrics B	45	1, 2	G30A year 4, G30B year 4
EC924	Monetary Economics	15	2	G30B year 4
EC931	International Trade	15	2	G30B year 4
EC941	Game Theory	15	2	G30B year 4
EC943	Industrial Economics	15	2	G30B year 4
EC9D4	Macroeconomics A	30	1	G30B year 4
	OR			
EC9D5	Macroeconomics B	30	1	G30B year 4
EP304	Introduction to Secondary Mathematics Teaching	15	2	Y602 year 3
EP304	Introduction to Secondary Mathematics Education	30	2	Y602 year 3
IB253	Principles of Finance 1	15	1	Y602 year 3
IB254	Principles of Finance 2	15	2	Y602 year 3
IB2C4	Managing Human Resources	15	1	Y602 year 3
IB2MKT	Marketing in Practice	15	1	Y602 year 3
IB337	Business Taxation	15	2	Y602 year 3
IB357	Investment Management	15	1	G30A year 4
IB359	Derivatives and Risk Management	15	2	G30A year 4, Y602 year 3
IB361	Equality and Diversity	15	1	Y602 year 3
IB368	International Business Strategy	15	2	Y602 year 3
IB370	Managing Strategy in the Digital Era	15	1	Y602 year 3
IB382	Project Management	15	1	Y602 year 3
IB384	Supply Chain Management	15	1	Y602 year 3
IB394	International Finance Management	15	1	G30A year 4
IB395	Finance in New Ventures	15	1	Y602 year 3
IB396	Financial Statement Analysis , Security Valuation	15	2	Y602 year 3
IB3D8	Corporate Strategy	15	1	Y602 year 3
IB3F2	Company Law	15	1	Y602 year 3
IB3J8	Banks and Financial Systems	15	1	Y602 year 3
MA222	Metric Spaces	12	2	G30D year 3, Y602 year 3
MA241	Combinatorics	12	1	G30D year 3, Y602 year 3
MA243	Geometry	12	1	G30D year 3, Y602 year 3
MA249	Algebra II: Groups and Rings	12	2	G30D year 3, Y602 year 3

Code	Name	CATS	Term	Source
MA250	Introduction to Partial Differential Equations	12	2	G30D year 3, Y602 year 3
MA251	Algebra I: Advanced Linear Algebra	12	1	G30D year 3, Y602 year 3
MA252	Combinatorial Optimization	12	2	G30D year 3, Y602 year 3
MA256	Introduction to Systems Biology	6	3	G30D year 3, Y602 year 3
MA257	Introduction to Number Theory	12	2	G30D year 3, Y602 year 3
MA258	Mathematical Analysis III	12	1	G30D year 3, Y602 year 3
MA259	Multivariable Calculus	12	1	G30D year 3, Y602 year 3
MA269	Asymptotics and Integral Transforms	12	2	G30D year 3, Y602 year 3
MA359	Measure Theory	15	1	G30A year 3, G30D year 3, Y602 year 3
MA377	Rings and Modules	15	2	G30D year 3, G30D year 4, Y602 year 3
MA390	Topics in Mathematical Biology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA398	Matrix Analysis and Algorithms	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3A6	Algebraic Number Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3B8	Complex Analysis	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3D1	Fluid Dynamics	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D4	Fractal Geometry	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D5	Galois Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D9	Geometry of Curves and Surfaces	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3E1	Groups and Representations	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F1	Introduction to Topology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F2	Knot Theory (suspended in 22/23)	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G1	Theory of PDEs	15	2	G30D year 3, G30D year 4, Y602 year 3

Code	Name	CATS	Term	Source
MA3G6	Commutative Algebra	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3G7	Functional Analysis I	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3G8	Functional Analysis II	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H0	Numerical Analysis and PDEs	15	2	G30A year 3, G30D year 3, G30D year 4, Y602 year 3
MA3H2	Markov Processes and Percolation Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H3	Set Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3H5	Manifolds	15	1	G30D year 3, G30D year 4
MA3H6	Algebraic Topology	15	2	G30D year 3, G30D year 4
MA3H7	Control Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3J2	Combinatorics II	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3J9	Historical Challenges in Mathematics	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K0	High Dimensional Probability	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K1	Mathematics of Machine Learning	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3K4	Introduction to Group Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA424	Dynamical Systems	15	1	G30D year 4
MA426	Elliptic Curves	15	2	G30D year 4
MA427	Ergodic Theory	15	2	G30D year 4
MA433	Fourier Analysis	15	1	G30D year 4
MA453	Lie Algebras	15	1	G30D year 4
MA475	Riemann Surfaces (suspended in 22/23)	15	2	G30D year 4
MA482	Stochastic Analysis	15	2	G30A year 4, G30D year 4
MA4A2	Advanced PDEs	15	1	G30D year 4
MA4A5	Algebraic Geometry	15	1	G30D year 4
MA4A7	Quantum Mechanics: Basic Principles and Probabilistic	15	1	G30D year 4

Code	Name	CATS	Term	Source
	Methods			
MA4C0	Differential Geometry	15	1	G30D year 4
MA4E0	Lie Groups	15	1	G30D year 4
MA4E7	Population Dynamics: Ecology and Epidemiology	15	2	G30D year 4
MA4H4	Geometric Group Theory	15	1	G30D year 4
MA4H8	Ring Theory	15	2	G30D year 4
MA4H9	Modular Forms	15	2	G30D year 4
MA4J0	Advanced Real Analysis	15	2	G30D year 4
MA4J1	Continuum Mechanics	15	1	G30D year 4
MA4J3	Graph Theory	15	1	G30D year 4
MA4L2	Statistical Mechanics	15	2	G30D year 4
MA4L8	Numerical Analysis and Nonlinear PDEs (suspended in 22/23)	15	2	G30A year 4, G30D year 4
MA4M1	Epidemiology by Example	15	2	G30D year 4
MA4M2	Mathematics of Inverse Problems	15	2	G30D year 4
ST305	Designed Experiments	15	2	G30D year 3, G30D year 4, Y602 year 3
ST313	Third Year Essay / Project (suspended in 22/23)	15		Y602 year 3
ST318	Probability Theory	15	2	G30A year 3, G30B year 3, G30D year 3, Y602 year 3
ST329	Topics in Statistics	15	2	G30D year 3, G30D year 4, Y602 year 3
ST332	Medical Statistics	15	2	G30D year 3, G30D year 4, Y602 year 3
ST333	Applied Stochastic Processes	15	1	G30A year 3, G30D year 3, Y602 year 3
ST334	Actuarial Methods	15	1	Y602 year 3, G30A year 3
ST335	Finance and Financial Reporting	15	1	G30A year 3, Y602 year 3
ST337	Bayesian Forecasting and Intervention	15	2	G30A year 3, G30A year 4, G30D year 3, Y602 year 3
ST338	Actuarial Models	15	2	Y602 year 3, G30A year 3
ST339	Introduction to Mathematical Finance	15	1	G30A year 3, Y602 year 3
ST340	Programming for Data Science	15	2	G30D year 3, G30D year 4, Y602 year 3
ST341	Statistical Genetics	15	2	G30D year 3, G30D year 4,

Code	Name	CATS	Term	Source
				Y602 year 3
ST342	Mathematics of Random Events	15	1	G30A year 3, G30D year 3, Y602 year 3
ST343	Topics in Data Science	15	2	G30D year 3, G30D year 4, Y602 year 3
ST344	Professional Practice of Data Analysis	15	1	G30A year 3, Y602 year 3
ST345	Life Contingencies	15	2	Y602 year 3, G30A year 3
ST346	Generalized Linear Models for Regression and Classification	15	1	Y602 year 3, G30A year 3, G30A year 4, G30D year 4, G30C year 3, G30C year 4
ST401	Stochastic Methods in Finance	15	1	G30A year 4, G30D year 4
ST402	Risk Theory	15	2	G30A year 4, G30D year 4
ST403	Brownian Motion	15	2	G30A year 4, G30D year 4
ST405	Bayesian Forecasting and Intervention with Advanced Topics	15	2	G30A year 3, G30A year 4, G30D year 3, G30D year 4
ST406	Applied Stochastic Processes with Advanced Topics	15	1	G30A year 3, G30A year 4, G30D year 3, G30D year 4
ST407	Monte Carlo Methods	15	1	G30D year 4
ST409	Medical Statistics with Advanced Topics	15	2	G30A year 4, G30D year 3, G30D year 4
ST410	Designed Experiments with Advanced Topics	15	2	G30A year 4, G30D year 3, G30D year 4
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1	G30A year 4, G30D year 4
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2	G30A year 4, G30D year 4
ST417	Topics in Applied Probability (suspended in 22/23)	15	3	G30A year 4, G30D year 4
ST418	Statistical Genetics with Advanced Topics	15	2	G30D year 3, G30D year 4
ST419	Advanced Topics in Data Science	15	2	G30D year 3, G30D year 4
ST420	Statistical Learning and Big Data	15	2	G30A year 4, G30D year 4
ST909	Applications of Stochastic Calculus for Finance	15	2	G30B year 4, G30C year 4, G30D year 4
ST958	Advanced Trading Strategies	15	2	G30C year 4, G30D year 4

2.11 Year 3 MMORSE Statistics with Mathematics Course Regulations

Statistics with Mathematics Stream

Objective: To prepare students for employment as statisticians and for research into statistics.

Syllabus: All the major areas of probability modelling, stochastic processes and statistical modelling.

2.11.1 Loading / Requirements

These requirements are **in addition** to the course regulations for all streams of MMORSE which must also be satisfied.

Students must take the core modules, **at least 15 CATS from List E** and **at least 15 CATS from List F**. In addition students must choose an appropriate number of modules from List E, List F, Optional Modules and Unusual Options to reach the minimum load.

2.11.2 Core

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Code	Name	CATS	Term
ST318	Probability Theory	15	2
ST404	Applied Statistical Modelling	15	2
ST323	Multivariate Statistics	15	1
	OR		
ST412	Multivariate Statistics with Advanced Topics	15	1
ST342	Mathematics of Random Events	15	1
	OR		
MA359	Measure Theory	15	1

2.11.3 List E

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
MA222	Metric Spaces	12	2
MA241	Combinatorics	12	1

Code	Name	CATS	Term
MA243	Geometry	12	1
MA249	Algebra II: Groups and Rings	12	2
MA250	Introduction to Partial Differential Equations	12	2
MA251	Algebra I: Advanced Linear Algebra	12	1
MA252	Combinatorial Optimization	12	2
MA256	Introduction to Systems Biology	6	3
MA257	Introduction to Number Theory	12	2
MA258	Mathematical Analysis III	12	1
MA259	Multivariable Calculus	12	1
MA269	Asymptotics and Integral Transforms	12	2
MA377	Rings and Modules	15	2
MA390	Topics in Mathematical Biology	15	1
MA398	Matrix Analysis and Algorithms	15	1
MA3A6	Algebraic Number Theory	15	1
MA3B8	Complex Analysis	15	1
MA3D1	Fluid Dynamics	15	2
MA3D4	Fractal Geometry	15	2
MA3D5	Galois Theory	15	2
MA3D9	Geometry of Curves and Surfaces	15	2
MA3E1	Groups and Representations	15	1
MA3F1	Introduction to Topology	15	1
MA3F2	Knot Theory (suspended in 22/23)	15	2
MA3G1	Theory of PDEs	15	2
MA3G6	Commutative Algebra	15	1
MA3G7	Functional Analysis I	15	1
MA3G8	Functional Analysis II	15	2
MA3H0	Numerical Analysis and PDEs	15	2
MA3H2	Markov Processes and Percolation Theory	15	2
MA3H3	Set Theory	15	1
MA3H5	Manifolds	15	1
MA3H6	Algebraic Topology	15	2
MA3H7	Control Theory	15	2
MA3J2	Combinatorics II	15	1
MA3J9	Historical Challenges in Mathematics	15	1
MA3K0	High Dimensional Probability	15	1

Code	Name	CATS	Term
MA3K1	Mathematics of Machine Learning	15	2
MA3K4	Introduction to Group Theory	15	1

2.11.4 List F

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
ST301	Bayesian Statistics and Decision Theory	15	1
ST305	Designed Experiments	15	2
ST329	Topics in Statistics	15	2
ST332	Medical Statistics	15	2
ST333	Applied Stochastic Processes	15	1
ST337	Bayesian Forecasting and Intervention	15	2
ST340	Programming for Data Science	15	2
ST341	Statistical Genetics	15	2
ST343	Topics in Data Science	15	2
ST346	Generalized Linear Models for Regression and Classification	15	1
ST405	Bayesian Forecasting and Intervention with Advanced Topics	15	2
ST406	Applied Stochastic Processes with Advanced Topics	15	1
ST409	Medical Statistics with Advanced Topics	15	2
ST410	Designed Experiments with Advanced Topics	15	2
ST413	Bayesian Statistics and Decision Theory with Advanced Topics	15	1
ST418	Statistical Genetics with Advanced Topics	15	2
ST419	Advanced Topics in Data Science	15	2

2.11.5 Optional Modules

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Optional modules are subject to change from year to year and some modules may be subject to availability / module preregistration.

For students who entered before 2020/2021: Optional modules that do not require an unusual option form are those listed in any stream of the third or fourth year of any MMORSE stream or in the third year of BSc MORSE.

For students who entered in or after 2020/2021: Optional modules that do not require an unusual option form are those listed in any stream of the third year of any MMORSE stream or BSc MORSE.

An illustrative table of modules that may be listed in other MORSE streams / programmes is shown below.

This was taken at a single snapshot in time - it is not a definitive guide and students are required to check that these modules are still listed in other streams / programmes.

Code	Name	CATS	Term	Source
EC208	Industrial Economics 1: Market Structure	15	1	G30B year 3, Y602 year 3
EC301	Mathematical Economics 2: Dynamics, Uncertainty , Asymmetrical Information	15	2	G30B year 3, G30B year 4, Y602 year 3
EC303	The British Economy in the Twentieth Century (suspended in 22/23)	15	1	G30B year 3, Y602 year 3
EC306	Econometrics 2: Time Series	15	2	G30A year 3, G30A year 4, G30B year 3, G30B year 4, Y602 year 3
EC307	Macroeconomic Policy in the EU	15	2	G30B year 3, Y602 year 3
EC310	Topics in Development Economics	15	2	G30B year 3, Y602 year 3
EC312	International Economics	15	1	G30B year 3, Y602 year 3
EC313	The International Economy in the Twentieth Century	15	2	Y602 year 3
EC314	Topics in Economic Theory	15	2	G30B year 3, G30B year 4, Y602 year 3
EC320	Economics of Public Policy	15	1	Y602 year 3
EC326	Industrial Economics 2: Strategy , Planning	15	2	Y602 year 3
EC331	Research in Applied Economics	30	1, 2	G30B year 3, Y602 year 3
EC333	Topics in Financial Economics: Theories and International Finance	15	1	G30B year 3, G30B year 4, Y602 year 3
EC334	Topics in Financial Economics: Corporate Finance and Markets	15	2	G30B year 3, G30B year 4, Y602 year 3
EC336	International Trade	15	2	Y602 year 3
EC337	Industrial Economics 2: Market Economics, Competition , Regulation	15	1	Y602 year 3

Code	Name	CATS	Term	Source
EC338	Econometrics 2: Microeconometrics	15	1	G30A year 3, G30A year 4, G30B year 3, G30B year 4, Y602 year 3
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15	1	G30B year 3, G30B year 4, Y602 year 3
EC901	Microeconomics A	30	1	G30B year 4
	OR			
EC9D3	Microeconomics B	30	1	G30B year 4
EC910	Quantitative Methods: Econometrics B	45	1, 2	G30A year 4, G30B year 4
EC924	Monetary Economics	15	2	G30B year 4
EC931	International Trade	15	2	G30B year 4
EC941	Game Theory	15	2	G30B year 4
EC943	Industrial Economics	15	2	G30B year 4
EC9D4	Macroeconomics A	30	1	G30B year 4
	OR			
EC9D5	Macroeconomics B	30	1	G30B year 4
EP304	Introduction to Secondary Mathematics Teaching	15	2	Y602 year 3
EP304	Introduction to Secondary Mathematics Education	30	2	Y602 year 3
IB253	Principles of Finance 1	15	1	Y602 year 3
IB254	Principles of Finance 2	15	2	Y602 year 3
IB2C4	Managing Human Resources	15	1	Y602 year 3
IB2MKT	Marketing in Practice	15	1	Y602 year 3
IB320	Simulation	15	2	G30C year 3, Y602 year 3
IB337	Business Taxation	15	2	Y602 year 3
IB349	Operational Research for Strategic Planning	15	1	G30C year 3, G30C year 4, Y602 year 3
IB352	Applied Optimisation Methods	15	2	G30A year 3, G30C year 3, Y602 year 3
IB357	Investment Management	15	1	G30A year 4
IB359	Derivatives and Risk Management	15	2	G30A year 4, Y602 year 3
IB361	Equality and Diversity	15	1	Y602 year 3
IB368	International Business Strategy	15	2	Y602 year 3
IB370	Managing Strategy in the Digital Era	15	1	Y602 year 3

Code	Name	CATS	Term	Source
IB382	Project Management	15	1	Y602 year 3
IB384	Supply Chain Management	15	1	Y602 year 3
IB394	International Finance Management	15	1	G30A year 4
IB395	Finance in New Ventures	15	1	Y602 year 3
IB396	Financial Statement Analysis , Security Valuation	15	2	Y602 year 3
IB3A7	The Practice of Operational Research	15	2	G30C year 3, G30C year 4, Y602 year 3
IB3D8	Corporate Strategy	15	1	Y602 year 3
IB3F2	Company Law	15	1	Y602 year 3
IB3J2	Decision Making Under Uncertainty	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J3	Mathematical Game Theory (suspended in 22/23)	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J8	Banks and Financial Systems	15	1	Y602 year 3
IB3K2	Financial Optimisation	15	2	G30A year 3, G30C year 3, G30C year 4, Y602 year 3
IB408	Operational Research for Strategic Planning with Advanced Topics	15	1	G30C year 4
IB410	Mathematical Game Theory with Advanced Topics (suspended in 22/23)	15	1	G30C year 4
IB411	Decision Making Under Uncertainty with Advanced Topics	15	1	G30C year 3, G30C year 4
IB9BS	Supply Chain Analytics	15	2	G30C year 4
IB9BW	Analytics in Practice	15	1	G30C year 4
IB98E	Forecasting	15	2	G30C year 4
IB9EO	Pricing Analytics (suspended in 22/23)	15	2	G30C year 4
IB9HP	Data Management	15	2	G30C year 4
ST313	Third Year Essay / Project (suspended in 22/23)	15		Y602 year 3
ST334	Actuarial Methods	15	1	Y602 year 3, G30A year 3
ST335	Finance and Financial Reporting	15	1	G30A year 3, Y602 year 3
ST338	Actuarial Models	15	2	Y602 year 3, G30A year 3
ST339	Introduction to Mathematical Finance	15	1	G30A year 3, Y602 year 3
ST344	Professional Practice of Data Analysis	15	1	G30A year 3, Y602 year 3

Code	Name	CATS	Term	Source
ST345	Life Contingencies	15	2	Y602 year 3, G30A year 3
ST401	Stochastic Methods in Finance	15	1	G30A year 4, G30C year 4
ST402	Risk Theory	15	2	G30A year 4, G30C year 4
ST403	Brownian Motion	15	2	G30A year 4, G30C year 4
ST407	Monte Carlo Methods	15	1	G30C year 4
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1	G30A year 4, G30C year 4
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2	G30A year 4, G30C year 4
ST417	Topics in Applied Probability (suspended in 22/23)	15	3	G30A year 4, G30C year 4
ST420	Statistical Learning and Big Data	15	2	G30A year 4, G30C year 4
ST909	Applications of Stochastic Calculus for Finance	15	2	G30B year 4, G30C year 4, G30D year 4
ST958	Advanced Trading Strategies	15	2	G30C year 4, G30D year 4

2.12 Year 3 MMORSE Progression and Outcomes

2.12.1 Requirements for Progression

2.12.1.1 Students starting in or before 20/21

In order to progress to the fourth year of the degree programme you must;

1. Have an overall year average of 55 percent or more
2. Pass **at least 60 CATS of whole modules**

2.12.1.2 Students starting in or after 21/22

In order to progress to the fourth year of the degree programme you must;

1. Have an overall year mark of 55 percent or more
2. Pass **at least 90 CATS of whole modules**

2.12.1.3 For students entering in 19/20 or before

The pass mark for all modules is 40% or above.

2.12.1.4 For students entering in 20/21 or after

The pass mark for level 1/2/3 is 40% or above. The pass mark for level 4+ modules is 50% or above, irrespective of the academic year in which a module is taken. Level 4+ can be broadly interpreted as module codes xx4xx, xx5xx, xx9xx, however the module catalogue should be consulted as the definitive guide.

2.12.2 Outcomes from the Summer Examination Board for MMORSE

The possible outcomes of the third year Summer examination board for MMORSE are as follows:

a. Permitted to proceed to the fourth year of study.
b. Permitted to proceed to the fourth year of study with optional further attempts
c. Required to take further attempts to be eligible to proceed to fourth year of study
d. Required to graduate immediately with BSc honours
e. Required to transfer to BSc and take further attempts to be eligible for BSc honours award

2.12.3 Outcomes from the September Examination Board for MMORSE

The possible outcomes of the third year summer examination board for MMORSE are as follows:

a. Permitted to proceed to the fourth year of study.
b. Required to graduate immediately with BSc honours award
c. Required to graduate immediately with BSc pass award
d. Required to take further attempts at the next opportunity
e. Required to withdraw*

Students who have not met requirements for the award of a BSc honours or BSc pass degree but have accepted mitigation for September reassessments or sat uncapped further first attempts in September will be required to take further attempts at the next opportunity. The next opportunity will usually be the following academic year at the normal time for the assessment or examination.

Students who are required to withdraw may be eligible for an exit qualification.

2.12.3.1 Students Allowed to Proceed

Students should be aware that the CATS passed in the third year form part of the requirement for the overall award:

2.12.3.1.1 Students starting in or before 20/21

- To qualify for an Integrated Masters Honours degree a candidate must pass (at the 40% level) at least 258 CATS in Years 2-4 including at least 90 CATS in the final year.

2.12.3.1.2 Students starting in or after 21/22

- For Integrated Masters students, the requirements will have been already satisfied if you are permitted to progress.

You may choose to graduate early with a BSc even if you have met the progression requirements to continue on the MMORSE programme. Further information can be found in the section on course transfers.

2.13 Year 4 MMORSE Course Regulations - All Streams

2.13.1 Loading / Requirements

The minimum and normal load is **120 CATS**.

The maximum load is **150 CATS**.

Students must take, over their third and fourth years, **at least 210 CATS of level 3+ modules** given by the Departments of Economics, Mathematics, Statistics and Warwick Business School, including **at least 120 CATS of level 4+ modules** from these same departments. Additionally, At least **90 CATS of level 4+ modules must be taken in the fourth year**, though modules from other departments may be counted in this requirement. (NB: Level 3+ should be interpreted as: xx3xx, xx4xx, xx5xx, xx9xx. Level 4+ should be interpreted as: xx4xx, xx5xx, xx9xx)

There are **additional requirements for each stream** which must also be satisfied.

It is **not permitted** to;

- take more than 30 CATS of unusual options
- take more than one of ST339, EC333 and IB253
- take more than one of ST339 and IB254
- take more than one of EC334 and IB254
- take more than one of ST342 and MA359
- take more than one of IE3E1, EP304-15 and EP304-30
- take more than one of ST337/ST405 and IB98E
- take the level 3 and level 4 version of the same module
- take module combinations from different streams in year 3 and year 4. Stream transfers are permitted at any time but the module choices must satisfy the requirements for a single stream in both years.

Other module restrictions may also apply as specified in module information pages.

Any modules not listed (including foreign languages) are classed as Unusual Options and permission to take these modules must be obtained with a completed Unusual Option form submitted to the support office by the specified deadline. Unusual options count towards your load but they do not count, under any circumstances, towards CATS requirements described in the course regulations where these regulations refer to Core Modules, Optional Modules, or letter Lists (e.g. List A, List B etc.). Further information about Unusual Options and deadlines can be found in section 3.4 of the handbook.

2.13.2 Notes on Course Regulations

- Students entering in 2020/2021 and later will not be permitted to take Level 2 modules in their fourth year (Note, Level 2 should be interpreted as xx2xx).
- Some optional modules may be subject to availability. Economics modules do not run if there aren't sufficient numbers and so check with Economics Department.

WBS normally restricts module pre-registrations for IB modules to 60 CATS for fourth year MMORSE students (not counting the dissertation module IB403).

- All fourth year students have to complete a dissertation (ST415 or EC400 or IB403) and are required to pass this module for the award of a Masters.
- Certain third and final year options have prerequisites which are not in the compulsory component of the second year. It is the responsibility of each student to be in a position to understand the modules chosen.
- It is a student's responsibility to ensure that the modules they are following are permitted — either because the modules are given explicitly as options by the regulations or because permission has been sought and granted by filling in an unusual option form.
- You are not allowed to take both the level 3 and level 4 version of the same module, e.g. ST323 Multivariate Statistics in Year 3 and then ST412 Multivariate Statistics with Advanced Topics in Year 4, or ST343 Topics in Data Science in Year 3 and ST419 Advanced Topics in Data Science in Year 4. So, again, when choosing your 3rd year options it is advisable to consider your 4th year options at the same time.
- The Pathways in the MMathStat degree webpage also provides further examples of module combinations relevant for a career (including a PhD) in Financial Mathematics as well as other specialisations. However, be aware that the pathways suggested are for the MMathStat degree and so may not satisfy the course regulations for the MMORSE degree.

2.14 Year 4 MMORSE Actuarial and Financial Mathematics Course Regulations

2.14.1 Loading / Requirements

These requirements are **in addition** to the course regulations for all streams of MMORSE which must also be satisfied.

Students must take the core modules and **at least 60 CATS from List A**. In addition students must choose an appropriate number of modules from List A, Optional Modules and Unusual Options to reach the minimum load.

2.14.2 Core

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Code	Name	CATS	Term
ST415	Statistics Masters Dissertation	30	1, 2, 3
	OR		
EC400	Statistics Master Dissertation in Economics	30	1, 2, 3
	OR		
IB403	Operational Research Dissertation	30	1, 2, 3

2.14.3 List A

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
EC306	Econometrics 2: Time Series	15	2
EC338	Econometrics 2: Microeconometrics	15	1
EC910	Quantitative Methods: Econometrics B	45	1, 2
IB357	Investment Management	15	1
IB359	Derivatives and Risk Management	15	2
IB394	International Finance Management	15	1
MA482	Stochastic Analysis	15	2
MA4L8	Numerical Analysis and Nonlinear PDEs (suspended in 22/23)	15	2
ST323	Multivariate Statistics	15	1
ST337	Bayesian Forecasting and Intervention	15	2
ST346	Generalized Linear Models for Regression and Classification	15	1
ST401	Stochastic Methods in Finance	15	1
ST402	Risk Theory	15	2
ST403	Brownian Motion	15	2
ST405	Bayesian Forecasting and Intervention with Advanced Topics	15	2
ST406	Applied Stochastic Processes with Advanced Topics	15	1
ST409	Medical Statistics with Advanced Topics	15	2
ST410	Designed Experiments with Advanced Topics	15	2
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1
ST412	Multivariate Statistics with Advanced Topics	15	1
ST413	Bayesian Statistics and Decision Theory with Advanced Topics	15	1
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2
ST417	Topics in Applied Probability (suspended in 22/23)	15	3
ST420	Statistical Learning and Big Data	15	2
ST909	Applications of Stochastic Calculus for Finance	15	2
ST958	Advanced Trading Strategies	15	2

2.14.4 Optional Modules

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Optional modules are subject to change from year to year and some modules may be subject to availability / module preregistration.

Optional modules that do not require an unusual option form are those listed in any stream of the third or fourth year of any MMORSE stream or in the third year of BSc MORSE.

An illustrative table of modules that may be listed in other MORSE streams / programmes is shown below.

This was taken at a single snapshot in time - it is not a definitive guide and students are required to check that these modules are still listed in other streams / programmes.

Code	Name	CATS	Term	Source
EC208	Industrial Economics 1: Market Structure	15	1	G30B year 3, Y602 year 3
EC301	Mathematical Economics 2: Dynamics, Uncertainty , Asymmetrical Information	15	2	G30B year 3, G30B year 4, Y602 year 3
EC303	The British Economy in the Twentieth Century (suspended in 22/23)	15	1	G30B year 3, Y602 year 3
EC307	Macroeconomic Policy in the EU	15	2	G30B year 3, Y602 year 3
EC310	Topics in Development Economics	15	2	G30B year 3, Y602 year 3
EC312	International Economics	15	1	G30B year 3, Y602 year 3
EC313	The International Economy in the Twentieth Century	15	2	Y602 year 3
EC314	Topics in Economic Theory	15	2	G30B year 3, G30B year 4, Y602 year 3
EC320	Economics of Public Policy	15	1	Y602 year 3
EC326	Industrial Economics 2: Strategy , Planning	15	2	Y602 year 3
EC331	Research in Applied Economics	30	1, 2	G30B year 3, Y602 year 3
EC333	Topics in Financial Economics: Theories and International Finance	15	1	G30B year 3, G30B year 4, Y602 year 3
EC334	Topics in Financial Economics: Corporate Finance and Markets	15	2	G30B year 3, G30B year 4, Y602 year 3

Code	Name	CATS	Term	Source
EC336	International Trade	15	2	Y602 year 3
EC337	Industrial Economics 2: Market Economics, Competition , Regulation	15	1	Y602 year 3
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15	1	G30B year 3, G30B year 4, Y602 year 3
EC901	Microeconomics A	30	1	G30B year 4
	OR			
EC9D3	Microeconomics B	30	1	G30B year 4
EC910	Quantitative Methods: Econometrics B	45	1, 2	G30B year 4
EC924	Monetary Economics	15	2	G30B year 4
EC931	International Trade	15	2	G30B year 4
EC941	Game Theory	15	2	G30B year 4
EC943	Industrial Economics	15	2	G30B year 4
EC9D4	Macroeconomics A	30	1	G30B year 4
	OR			
EC9D5	Macroeconomics B	30	1	G30B year 4
EP304	Introduction to Secondary Mathematics Teaching	15	2	Y602 year 3
EP304	Introduction to Secondary Mathematics Education	30	2	Y602 year 3
IB253	Principles of Finance 1	15	1	Y602 year 3
IB254	Principles of Finance 2	15	2	Y602 year 3
IB2C4	Managing Human Resources	15	1	Y602 year 3
IB2MKT	Marketing in Practice	15	1	Y602 year 3
IB320	Simulation	15	2	G30C year 3, Y602 year 3
IB337	Business Taxation	15	2	Y602 year 3
IB349	Operational Research for Strategic Planning	15	1	G30C year 3, G30C year 4, Y602 year 3
IB359	Derivatives and Risk Management	15	2	Y602 year 3
IB361	Equality and Diversity	15	1	Y602 year 3
IB368	International Business Strategy	15	2	Y602 year 3
IB370	Managing Strategy in the Digital Era	15	1	Y602 year 3
IB382	Project Management	15	1	Y602 year 3
IB384	Supply Chain Management	15	1	Y602 year 3
IB395	Finance in New Ventures	15	1	Y602 year 3

Code	Name	CATS	Term	Source
IB396	Financial Statement Analysis , Security Valuation	15	2	Y602 year 3
IB3A7	The Practice of Operational Research	15	2	G30C year 3, G30C year 4, Y602 year 3
IB3D8	Corporate Strategy	15	1	Y602 year 3
IB3F2	Company Law	15	1	Y602 year 3
IB3J2	Decision Making Under Uncertainty	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J3	Mathematical Game Theory (suspended in 22/23)	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J8	Banks and Financial Systems	15	1	Y602 year 3
IB408	Operational Research for Strategic Planning with Advanced Topics	15	1	G30C year 4
IB410	Mathematical Game Theory with Advanced Topics (suspended in 22/23)	15	1	G30C year 4
IB411	Decision Making Under Uncertainty with Advanced Topics	15	1	G30C year 3, G30C year 4
IB9BS	Supply Chain Analytics	15	2	G30C year 4
IB9BW	Analytics in Practice	15	1	G30C year 4
IB98E	Forecasting	15	2	G30C year 4
IB9EO	Pricing Analytics (suspended in 22/23)	15	2	G30C year 4
IB9HP	Data Management	15	2	G30C year 4
MA222	Metric Spaces	12	2	G30D year 3, Y602 year 3
MA241	Combinatorics	12	1	G30D year 3, Y602 year 3
MA243	Geometry	12	1	G30D year 3, Y602 year 3
MA249	Algebra II: Groups and Rings	12	2	G30D year 3, Y602 year 3
MA250	Introduction to Partial Differential Equations	12	2	G30D year 3, Y602 year 3
MA251	Algebra I: Advanced Linear Algebra	12	1	G30D year 3, Y602 year 3
MA252	Combinatorial Optimization	12	2	G30D year 3, Y602 year 3
MA256	Introduction to Systems Biology	6	3	G30D year 3, Y602 year 3

Code	Name	CATS	Term	Source
MA257	Introduction to Number Theory	12	2	G30D year 3, Y602 year 3
MA258	Mathematical Analysis III	12	1	G30D year 3, Y602 year 3
MA259	Multivariable Calculus	12	1	G30D year 3, Y602 year 3
MA269	Asymptotics and Integral Transforms	12	2	G30D year 3, Y602 year 3
MA377	Rings and Modules	15	2	G30D year 3, G30D year 4, Y602 year 3
MA390	Topics in Mathematical Biology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA398	Matrix Analysis and Algorithms	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3A6	Algebraic Number Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3B8	Complex Analysis	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3D1	Fluid Dynamics	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D4	Fractal Geometry	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D5	Galois Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D9	Geometry of Curves and Surfaces	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3E1	Groups and Representations	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F1	Introduction to Topology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F2	Knot Theory (suspended in 22/23)	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G1	Theory of PDEs	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G6	Commutative Algebra	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3G7	Functional Analysis I	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3G8	Functional Analysis II	15	2	G30D year 3, G30D

Code	Name	CATS	Term	Source
				year 4, Y602 year 3
MA3H2	Markov Processes and Percolation Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H3	Set Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3H5	Manifolds	15	1	G30D year 3, G30D year 4
MA3H6	Algebraic Topology	15	2	G30D year 3, G30D year 4
MA3H7	Control Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3J2	Combinatorics II	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3J9	Historical Challenges in Mathematics	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K0	High Dimensional Probability	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K1	Mathematics of Machine Learning	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3K4	Introduction to Group Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA424	Dynamical Systems	15	1	G30D year 4
MA426	Elliptic Curves	15	2	G30D year 4
MA427	Ergodic Theory	15	2	G30D year 4
MA433	Fourier Analysis	15	1	G30D year 4
MA453	Lie Algebras	15	1	G30D year 4
MA475	Riemann Surfaces (suspended in 22/23)	15	2	G30D year 4
MA4A2	Advanced PDEs	15	1	G30D year 4
MA4A5	Algebraic Geometry	15	1	G30D year 4
MA4A7	Quantum Mechanics: Basic Principles and Probabilistic Methods	15	1	G30D year 4
MA4C0	Differential Geometry	15	1	G30D year 4
MA4E0	Lie Groups	15	1	G30D year 4
MA4E7	Population Dynamics: Ecology and Epidemiology	15	2	G30D year 4
MA4H4	Geometric Group Theory	15	1	G30D year 4
MA4H8	Ring Theory	15	2	G30D year 4

Code	Name	CATS	Term	Source
MA4H9	Modular Forms	15	2	G30D year 4
MA4J0	Advanced Real Analysis	15	2	G30D year 4
MA4J1	Continuum Mechanics	15	1	G30D year 4
MA4J3	Graph Theory	15	1	G30D year 4
MA4L2	Statistical Mechanics	15	2	G30D year 4
MA4M1	Epidemiology by Example	15	2	G30D year 4
MA4M2	Mathematics of Inverse Problems	15	2	G30D year 4
ST305	Designed Experiments	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST313	Third Year Essay / Project (suspended in 22/23)	15		Y602 year 3
ST329	Topics in Statistics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST332	Medical Statistics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST340	Programming for Data Science	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST341	Statistical Genetics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST343	Topics in Data Science	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST401	Stochastic Methods in Finance	15	1	G30C year 4, G30D year 4
ST402	Risk Theory	15	2	G30C year 4, G30D year 4
ST403	Brownian Motion	15	2	G30C year 4, G30D year 4
ST407	Monte Carlo Methods	15	1	G30C year 4, G30D year 4
ST409	Medical Statistics with Advanced Topics	15	2	G30C year 4, G30D year 3, G30D year 4
ST410	Designed Experiments with Advanced Topics	15	2	G30C year 4, G30D year 3, G30D year 4

Code	Name	CATS	Term	Source
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1	G30C year 4, G30D year 4
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2	G30C year 4, G30D year 4
ST417	Topics in Applied Probability (suspended in 22/23)	15	3	G30C year 4, G30D year 4
ST418	Statistical Genetics with Advanced Topics	15	2	G30C year 4, G30Dn year 3, G30D year 4
ST419	Advanced Topics in Data Science	15	2	G30C year 4, G30D year 3, G30D year 4
ST420	Statistical Learning and Big Data	15	2	G30C year 4, G30D year 4
ST909	Applications of Stochastic Calculus for Finance	15	2	G30B year 4, G30C year 4, G30D year 4
ST958	Advanced Trading Strategies	15	2	G30C year 4, G30D year 4

2.15 Year 4 MMORSE Econometrics and Mathematical Economics Course Regulations

2.15.1 Loading / Requirements

These requirements are **in addition** to the course regulations for all streams of MMORSE which must also be satisfied.

Students must take the core modules and **at least 60 CATS from List B**. In addition students must choose an appropriate number of modules from List B, Options and Unusual Options to reach the minimum load.

2.15.2 Core

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Code	Name	CATS	Term
ST415	Statistics Masters Dissertation	30	1, 2, 3
	OR		
EC400	Statistics Master Dissertation in Economics	30	1, 2, 3
	OR		
IB403	Operational Research Dissertation	30	1, 2, 3

2.15.3 List B

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
EC301	Mathematical Economics 2: Dynamics, Uncertainty , Asymmetrical Information	15	2
EC306	Econometrics 2: Time Series	15	2
EC314	Topics in Economic Theory	15	2
EC333	Topics in Financial Economics: Theories and International Finance	15	1
EC334	Topics in Financial Economics: Corporate Finance and Markets	15	2
EC338	Econometrics 2: Microeconometrics	15	1
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15	1
EC901	Microeconomics A	30	1
	OR		
EC9D3	Microeconomics B	30	1
EC910	Quantitative Methods: Econometrics B	45	1, 2
EC924	Monetary Economics	15	2
EC931	International Trade	15	2
EC941	Game Theory	15	2
EC943	Industrial Economics	15	2
EC9D4	Macroeconomics A	30	1
	OR		
EC9D5	Macroeconomics B	30	1
ST909	Applications of Stochastic Calculus for Finance	15	2

2.15.4 Optional Modules

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Optional modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Optional modules that do not require an unusual option form are those listed in any stream of the third or fourth year of any MMORSE stream or in the third year of BSc MORSE.

An illustrative table of modules that may be listed in other MORSE streams / programmes is shown below.

This was taken at a single snapshot in time - it is not a definitive guide and students are required to check that these modules are still listed in other streams / programmes.

Code	Name	CATS	Term	Source
EC313	The International Economy in the Twentieth Century	15	2	Y602 year 3
EC320	Economics of Public Policy	15	1	Y602 year 3
EC326	Industrial Economics 2: Strategy , Planning	15	2	Y602 year 3
EC336	International Trade	15	2	Y602 year 3
EC337	Industrial Economics 2: Market Economics, Competition , Regulation	15	1	Y602 year 3
EC910	Quantitative Methods: Econometrics B	45	1, 2	G30A year 4
EP304	Introduction to Secondary Mathematics Teaching	15	2	Y602 year 3
EP304	Introduction to Secondary Mathematics Education	30	2	Y602 year 3
IB253	Principles of Finance 1	15	1	Y602 year 3
IB254	Principles of Finance 2	15	2	Y602 year 3
IB2C4	Managing Human Resources	15	1	Y602 year 3
IB2MKT	Marketing in Practice	15	1	Y602 year 3
IB320	Simulation	15	2	G30C year 3, Y602 year 3
IB337	Business Taxation	15	2	Y602 year 3
IB349	Operational Research for Strategic Planning	15	1	G30C year 3, G30C year 4, Y602 year 3
IB352	Applied Optimisation Methods	15	2	G30A year 3, G30C year 3, Y602 year 3
IB357	Investment Management	15	1	G30A year 4
IB359	Derivatives and Risk Management	15	2	G30A year 4, Y602 year 3
IB361	Equality and Diversity	15	1	Y602 year 3
IB368	International Business Strategy	15	2	Y602 year 3
IB370	Managing Strategy in the Digital Era	15	1	Y602 year 3
IB382	Project Management	15	1	Y602 year 3
IB384	Supply Chain Management	15	1	Y602 year 3

Code	Name	CATS	Term	Source
IB394	International Finance Management	15	1	G30A year 4
IB395	Finance in New Ventures	15	1	Y602 year 3
IB396	Financial Statement Analysis , Security Valuation	15	2	Y602 year 3
IB3A7	The Practice of Operational Research	15	2	G30C year 3, G30C year 4, Y602 year 3
IB3D8	Corporate Strategy	15	1	Y602 year 3
IB3F2	Company Law	15	1	Y602 year 3
IB3J2	Decision Making Under Uncertainty	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J3	Mathematical Game Theory (suspended in 22/23)	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J8	Banks and Financial Systems	15	1	Y602 year 3
IB3K2	Financial Optimisation	15	2	G30A year 3, G30C year 3, G30C year 4, Y602 year 3
IB408	Operational Research for Strategic Planning with Advanced Topics	15	1	G30C year 4
IB410	Mathematical Game Theory with Advanced Topics (suspended in 22/23)	15	1	G30C year 4
IB411	Decision Making Under Uncertainty with Advanced Topics	15	1	G30C year 3, G30C year 4
IB9BS	Supply Chain Analytics	15	2	G30C year 4
IB9BW	Analytics in Practice	15	1	G30C year 4
IB98E	Forecasting	15	2	G30C year 4
IB9EO	Pricing Analytics (suspended in 22/23)	15	2	G30C year 4
IB9HP	Data Management	15	2	G30C year 4
MA222	Metric Spaces	12	2	G30D year 3, Y602 year 3
MA241	Combinatorics	12	1	G30D year 3, Y602 year 3
MA243	Geometry	12	1	G30D year 3, Y602 year 3
MA249	Algebra II: Groups and Rings	12	2	G30D year 3, Y602 year 3
MA250	Introduction to Partial Differential Equations	12	2	G30D year 3, Y602 year 3
MA251	Algebra I: Advanced Linear	12	1	G30D year 3, Y602 year 3

Code	Name	CATS	Term	Source
	Algebra			
MA252	Combinatorial Optimization	12	2	G30D year 3, Y602 year 3
MA256	Introduction to Systems Biology	6	3	G30D year 3, Y602 year 3
MA257	Introduction to Number Theory	12	2	G30D year 3, Y602 year 3
MA258	Mathematical Analysis III	12	1	G30D year 3, Y602 year 3
MA259	Multivariable Calculus	12	1	G30D year 3, Y602 year 3
MA269	Asymptotics and Integral Transforms	12	2	G30D year 3, Y602 year 3
MA359	Measure Theory	15	1	G30A year 3, G30D year 3, Y602 year 3
MA377	Rings and Modules	15	2	G30D year 3, G30D year 4, Y602 year 3
MA390	Topics in Mathematical Biology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA398	Matrix Analysis and Algorithms	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3A6	Algebraic Number Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3B8	Complex Analysis	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3D1	Fluid Dynamics	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D4	Fractal Geometry	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D5	Galois Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D9	Geometry of Curves and Surfaces	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3E1	Groups and Representations	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F1	Introduction to Topology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F2	Knot Theory (suspended in 22/23)	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G1	Theory of PDEs	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G6	Commutative Algebra	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3G7	Functional Analysis I	15	1	G30D year 3, G30D year 4,

Code	Name	CATS	Term	Source
				Y602 year 3
MA3G8	Functional Analysis II	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H0	Numerical Analysis and PDEs	15	2	G30A year 3, G30D year 3, G30D year 4, Y602 year 3
MA3H2	Markov Processes and Percolation Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H3	Set Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3H5	Manifolds	15	1	G30D year 3, G30D year 4
MA3H6	Algebraic Topology	15	2	G30D year 3, G30D year 4
MA3H7	Control Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3J2	Combinatorics II	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3J9	Historical Challenges in Mathematics	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K0	High Dimensional Probability	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K1	Mathematics of Machine Learning	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3K4	Introduction to Group Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA424	Dynamical Systems	15	1	G30D year 4
MA426	Elliptic Curves	15	2	G30D year 4
MA427	Ergodic Theory	15	2	G30D year 4
MA433	Fourier Analysis	15	1	G30D year 4
MA453	Lie Algebras	15	1	G30D year 4
MA475	Riemann Surfaces (suspended in 22/23)	15	2	G30D year 4
MA482	Stochastic Analysis	15	2	G30A year 4, G30D year 4
MA4A2	Advanced PDEs	15	1	G30D year 4
MA4A5	Algebraic Geometry	15	1	G30D year 4
MA4A7	Quantum Mechanics: Basic Principles and Probabilistic Methods	15	1	G30D year 4
MA4C0	Differential Geometry	15	1	G30D year 4
MA4E0	Lie Groups	15	1	G30D year 4

Code	Name	CATS	Term	Source
MA4E7	Population Dynamics: Ecology and Epidemiology	15	2	G30D year 4
MA4H4	Geometric Group Theory	15	1	G30D year 4
MA4H8	Ring Theory	15	2	G30D year 4
MA4H9	Modular Forms	15	2	G30D year 4
MA4J0	Advanced Real Analysis	15	2	G30D year 4
MA4J1	Continuum Mechanics	15	1	G30D year 4
MA4J3	Graph Theory	15	1	G30D year 4
MA4L2	Statistical Mechanics	15	2	G30D year 4
MA4L8	Numerical Analysis and Nonlinear PDEs (suspended in 22/23)	15	2	G30A year 4, G30D year 4
MA4M1	Epidemiology by Example	15	2	G30D year 4
MA4M2	Mathematics of Inverse Problems	15	2	G30D year 4
ST301	Bayesian Statistics and Decision Theory	15	1	G30A year 3, G30C year 3, G30D year 3, G30D year 4, Y602 year 3
ST305	Designed Experiments	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST313	Third Year Essay / Project (suspended in 22/23)	15		Y602 year 3
ST329	Topics in Statistics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST332	Medical Statistics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST333	Applied Stochastic Processes	15	1	G30A year 3, G30D year 3, Y602 year 3
ST334	Actuarial Methods	15	1	Y602 year 3, G30A year 3
ST335	Finance and Financial Reporting	15	1	G30A year 3, Y602 year 3
ST337	Bayesian Forecasting and Intervention	15	2	G30A year 3, G30A year 4, G30D year 3, Y602 year 3
ST338	Actuarial Models	15	2	Y602 year 3, G30A year 3
ST339	Introduction to Mathematical Finance	15	1	G30A year 3, Y602 year 3
ST340	Programming for Data Science	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST341	Statistical Genetics	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST342	Mathematics of Random Events	15	1	G30A year 3, G30D year 3,

Code	Name	CATS	Term	Source
				Y602 year 3
ST343	Topics in Data Science	15	2	G30C year 4, G30D year 3, G30D year 4, Y602 year 3
ST344	Professional Practice of Data Analysis	15	1	G30A year 3, Y602 year 3
ST345	Life Contingencies	15	2	Y602 year 3, G30A year 3
ST346	Generalized Linear Models for Regression and Classification	15	1	Y602 year 3, G30A year 3, G30A year 4, G30D year 4, G30C year 3, G30C year 4
ST401	Stochastic Methods in Finance	15	1	G30A year 4, G30C year 4, G30D year 4
ST402	Risk Theory	15	2	G30A year 4, G30C year 4, G30D year 4
ST403	Brownian Motion	15	2	G30A year 4, G30C year 4, G30D year 4
ST405	Bayesian Forecasting and Intervention with Advanced Topics	15	2	G30A year 3, G30A year 4, G30D year 3, G30D year 4
ST406	Applied Stochastic Processes with Advanced Topics	15	1	G30A year 3, G30A year 4, G30C year 4, G30D year 3, G30D year 4
ST407	Monte Carlo Methods	15	1	G30C year 4, G30D year 4
ST409	Medical Statistics with Advanced Topics	15	2	G30A year 4, G30C year 4, G30D year 3, G30D year 4
ST410	Designed Experiments with Advanced Topics	15	2	G30A year 4, G30C year 4, G30D year 3, G30D year 4
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1	G30A year 4, G30C year 4, G30D year 4
ST413	Bayesian Statistics and Decision Theory with Advanced Topics	15	1	G30A year 3, G30A year 4, G30C year 3, G30D year 3, G30D year 4
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2	G30A year 4, G30C year 4, G30D year 4
ST417	Topics in Applied Probability (suspended in 22/23)	15	3	G30C year 4, G30D year 4, G30A year 4
ST418	Statistical Genetics with Advanced Topics	15	2	G30C year 4, G30D year 3, G30D year 4
ST419	Advanced Topics in Data Science	15	2	G30C year 4, G30D year 3, G30D year 4

Code	Name	CATS	Term	Source
ST420	Statistical Learning and Big Data	15	2	G30A year 4, G30C year 4, G30D year 4
ST909	Applications of Stochastic Calculus for Finance	15	2	G30B year 4, G30C year 4, G30D year 4
ST958	Advanced Trading Strategies	15	2	G30C year 4, G30D year 4

2.16 Year 4 MMORSE Operational Research and Statistics Course Regulations

2.16.1 Loading / Requirements

These requirements are **in addition** to the course regulations for all streams of MMORSE which must also be satisfied.

Students must take the core modules, **at least 30 CATS from List C** and **at least 30 CATS from List D**. In addition students must choose an appropriate number of modules from List C, List D, Optional Modules and Unusual Options to reach the minimum load.

2.16.2 Core

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Code	Name	CATS	Term
ST415	Statistics Masters Dissertation	30	1, 2, 3
	OR		
EC400	Statistics Master Dissertation in Economics	30	1, 2, 3
	OR		
IB403	Operational Research Dissertation	30	1, 2, 3

2.16.3 List C

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration. Moreover, note that for IB9 modules, students **are not permitted** to register or de-register after the end of Week 1.

Code	Name	CATS	Term
IB349	Operational Research for Strategic Planning	15	1
IB3A7	The Practice of Operational Research	15	2
IB3J2	Decision Making Under Uncertainty	15	1

Code	Name	CATS	Term
IB3J3	Mathematical Game Theory (suspended in 22/23)	15	1
IB3K2	Financial Optimisation	15	2
IB408	Operational Research for Strategic Planning with Advanced Topics	15	1
IB410	Mathematical Game Theory with Advanced Topics (suspended in 22/23)	15	1
IB411	Decision Making Under Uncertainty with Advanced Topics	15	1
IB9HP	Data Management	15	2
IB9EO	Pricing Analytics (suspended in 22/23)	15	2
IB9BS	Supply Chain Analytics	15	2
IB9BW	Analytics in Practice	15	1
IB98E	Forecasting	15	2

2.16.4 List D

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
ST305	Designed Experiments	15	2
ST318	Probability Theory	15	2
ST329	Topics in Statistics	15	2
ST332	Medical Statistics	15	2
ST340	Programming for Data Science	15	2
ST341	Statistical Genetics	15	2
ST343	Topics in Data Science	15	2
ST346	Generalized Linear Models for Regression and Classification	15	1
ST401	Stochastic Methods in Finance	15	1
ST402	Risk Theory	15	2
ST403	Brownian Motion	15	2
ST406	Applied Stochastic Processes with Advanced Topics	15	1
ST407	Monte Carlo Methods	15	1
ST409	Medical Statistics with Advanced Topics	15	2
ST410	Designed Experiments with Advanced Topics	15	2
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1

Code	Name	CATS	Term
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2
ST417	Topics in Applied Probability (suspended in 22/23)	15	3
ST418	Statistical Genetics with Advanced Topics	15	2
ST419	Advanced Topics in Data Science	15	2
ST420	Statistical Learning and Big Data	15	2
ST909	Applications of Stochastic Calculus for Finance	15	2
ST958	Advanced Trading Strategies	15	2

2.16.5 Optional Modules

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Optional modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Optional modules that do not require an unusual option form are those listed in any stream of the third or fourth year of any MMORSE stream or in the third year of BSc MORSE.

An illustrative table of modules that may be listed in other MORSE streams / programmes is shown below.

This was taken at a single snapshot in time - it is not a definitive guide and students are required to check that these modules are still listed in other streams / programmes.

Code	Name	CATS	Term	Source
EC208	Industrial Economics 1: Market Structure	15	1	G30B year 3, Y602 year 3
EC301	Mathematical Economics 2: Dynamics, Uncertainty , Asymmetrical Information	15	2	G30B year 3, G30B year 4, Y602 year 3
EC303	The British Economy in the Twentieth Century (suspended in 22/23)	15	1	G30B year 3, Y602 year 3
EC306	Econometrics 2: Time Series	15	2	G30A year 3, G30A year 4, G30B year 3, G30B year 4, Y602 year 3
EC307	Macroeconomic Policy in the EU	15	2	G30B year 3, Y602 year 3
EC310	Topics in Development Economics	15	2	G30B year 3, Y602 year 3
EC312	International Economics	15	1	G30B year 3, Y602 year 3
EC313	The International Economy in the Twentieth Century	15	2	Y602 year 3

Code	Name	CATS	Term	Source
EC314	Topics in Economic Theory	15	2	G30B year 3, G30B year 4, Y602 year 3
EC320	Economics of Public Policy	15	1	Y602 year 3
EC326	Industrial Economics 2: Strategy , Planning	15	2	Y602 year 3
EC331	Research in Applied Economics	30	1, 2	G30B year 3, Y602 year 3
EC333	Topics in Financial Economics: Theories and International Finance	15	1	G30B year 3, G30B year 4, Y602 year 3
EC334	Topics in Financial Economics: Corporate Finance and Markets	15	2	G30B year 3, G30B year 4, Y602 year 3
EC336	International Trade	15	2	Y602 year 3
EC337	Industrial Economics 2: Market Economics, Competition , Regulation	15	1	Y602 year 3
EC338	Econometrics 2: Microeconometrics	15	1	G30A year 3, G30A year 4, G30B year 3, G30B year 4, Y602 year 3
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15	1	G30B year 3, G30B year 4, Y602 year 3
EC901	Microeconomics A	30	1	G30B year 4
	OR			
EC9D3	Microeconomics B	30	1	G30B year 4
EC910	Quantitative Methods: Econometrics B	45	1, 2	G30A year 4, G30B year 4
EC924	Monetary Economics	15	2	G30B year 4
EC931	International Trade	15	2	G30B year 4
EC941	Game Theory	15	2	G30B year 4
EC943	Industrial Economics	15	2	G30B year 4
EC9D4	Macroeconomics A	30	1	G30B year 4
	OR			
EC9D5	Macroeconomics B	30	1	G30B year 4
EP304	Introduction to Secondary Mathematics Teaching	15	2	Y602 year 3
EP304	Introduction to Secondary Mathematics Education	30	2	Y602 year 3
IB253	Principles of Finance 1	15	1	Y602 year 3
IB254	Principles of Finance 2	15	2	Y602 year 3
IB2C4	Managing Human Resources	15	1	Y602 year 3

Code	Name	CATS	Term	Source
IB2MKT	Marketing in Practice	15	1	Y602 year 3
IB337	Business Taxation	15	2	Y602 year 3
IB357	Investment Management	15	1	G30A year 4
IB359	Derivatives and Risk Management	15	2	G30A year 4, Y602 year 3
IB361	Equality and Diversity	15	1	Y602 year 3
IB368	International Business Strategy	15	2	Y602 year 3
IB370	Managing Strategy in the Digital Era	15	1	Y602 year 3
IB382	Project Management	15	1	Y602 year 3
IB384	Supply Chain Management	15	1	Y602 year 3
IB394	International Finance Management	15	1	G30A year 4
IB395	Finance in New Ventures	15	1	Y602 year 3
IB396	Financial Statement Analysis , Security Valuation	15	2	Y602 year 3
IB3D8	Corporate Strategy	15	1	Y602 year 3
IB3F2	Company Law	15	1	Y602 year 3
IB3J8	Banks and Financial Systems	15	1	Y602 year 3
MA222	Metric Spaces	12	2	G30D year 3, Y602 year 3
MA241	Combinatorics	12	1	G30D year 3, Y602 year 3
MA243	Geometry	12	1	G30D year 3, Y602 year 3
MA249	Algebra II: Groups and Rings	12	2	G30D year 3, Y602 year 3
MA250	Introduction to Partial Differential Equations	12	2	G30D year 3, Y602 year 3
MA251	Algebra I: Advanced Linear Algebra	12	1	G30D year 3, Y602 year 3
MA252	Combinatorial Optimization	12	2	G30D year 3, Y602 year 3
MA256	Introduction to Systems Biology	6	3	G30D year 3, Y602 year 3
MA257	Introduction to Number Theory	12	2	G30D year 3, Y602 year 3
MA258	Mathematical Analysis III	12	1	G30D year 3, Y602 year 3
MA259	Multivariable Calculus	12	1	G30D year 3, Y602 year 3
MA269	Asymptotics and Integral Transforms	12	2	G30D year 3, Y602 year 3
MA359	Measure Theory	15	1	G30A year 3, G30D year 3, Y602 year 3
MA377	Rings and Modules	15	2	G30D year 3, G30D year 4, Y602 year 3
MA390	Topics in Mathematical Biology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA398	Matrix Analysis and Algorithms	15	1	G30D year 3, G30D year

Code	Name	CATS	Term	Source
				4, Y602 year 3
MA3A6	Algebraic Number Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3B8	Complex Analysis	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3D1	Fluid Dynamics	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D4	Fractal Geometry	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D5	Galois Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3D9	Geometry of Curves and Surfaces	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3E1	Groups and Representations	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F1	Introduction to Topology	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3F2	Knot Theory (suspended in 22/23)	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G1	Theory of PDEs	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3G6	Commutative Algebra	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3G7	Functional Analysis I	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3G8	Functional Analysis II	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H0	Numerical Analysis and PDEs	15	2	G30A year 3, G30D year 3, G30D year 4, Y602 year 3
MA3H2	Markov Processes and Percolation Theory	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3H3	Set Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3H5	Manifolds	15	1	G30D year 3, G30D year 4
MA3H6	Algebraic Topology	15	2	G30D year 3, G30D year 4
MA3H7	Control Theory	15	2	G30D year 3, G30D year

Code	Name	CATS	Term	Source
				4, Y602 year 3
MA3J2	Combinatorics II	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3J9	Historical Challenges in Mathematics	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K0	High Dimensional Probability	15	1	G30D year 3, G30D year 4, Y602 year 3
MA3K1	Mathematics of Machine Learning	15	2	G30D year 3, G30D year 4, Y602 year 3
MA3K4	Introduction to Group Theory	15	1	G30D year 3, G30D year 4, Y602 year 3
MA424	Dynamical Systems	15	1	G30D year 4
MA426	Elliptic Curves	15	2	G30D year 4
MA427	Ergodic Theory	15	2	G30D year 4
MA433	Fourier Analysis	15	1	G30D year 4
MA453	Lie Algebras	15	1	G30D year 4
MA475	Riemann Surfaces (suspended in 22/23)	15	2	G30D year 4
MA482	Stochastic Analysis	15	2	G30A year 4, G30D year 4
MA4A2	Advanced PDEs	15	1	G30D year 4
MA4A5	Algebraic Geometry	15	1	G30D year 4
MA4A7	Quantum Mechanics: Basic Principles and Probabilistic Methods	15	1	G30D year 4
MA4C0	Differential Geometry	15	1	G30D year 4
MA4E0	Lie Groups	15	1	G30D year 4
MA4E7	Population Dynamics: Ecology and Epidemiology	15	2	G30D year 4
MA4H4	Geometric Group Theory	15	1	G30D year 4
MA4H8	Ring Theory	15	2	G30D year 4
MA4H9	Modular Forms	15	2	G30D year 4
MA4J0	Advanced Real Analysis	15	2	G30D year 4
MA4J1	Continuum Mechanics	15	1	G30D year 4
MA4J3	Graph Theory	15	1	G30D year 4
MA4L2	Statistical Mechanics	15	2	G30D year 4
MA4L8	Numerical Analysis and Nonlinear PDEs (suspended in 22/23)	15	2	G30A year 4, G30D year 4

Code	Name	CATS	Term	Source
MA4M1	Epidemiology by Example	15	2	G30D year 4
MA4M2	Mathematics of Inverse Problems	15	2	G30D year 4
ST305	Designed Experiments	15	2	G30D year 3, G30D year 4, Y602 year 3
ST313	Third Year Essay / Project (suspended in 22/23)	15		Y602 year 3
ST318	Probability Theory	15	2	G30A year 3, G30B year 3, G30D year 3, Y602 year 3
ST329	Topics in Statistics	15	2	G30D year 3, G30D year 4, Y602 year 3
ST332	Medical Statistics	15	2	G30D year 3, G30D year 4, Y602 year 3
ST333	Applied Stochastic Processes	15	1	G30A year 3, G30D year 3, Y602 year 3
ST334	Actuarial Methods	15	1	Y602 year 3, G30A year 3
ST335	Finance and Financial Reporting	15	1	G30A year 3, Y602 year 3
ST337	Bayesian Forecasting and Intervention	15	2	G30A year 3, G30A year 4, G30D year 3, Y602 year 3
ST338	Actuarial Models	15	2	Y602 year 3, G30A year 3
ST339	Introduction to Mathematical Finance	15	1	G30A year 3, Y602 year 3
ST340	Programming for Data Science	15	2	G30D year 3, G30D year 4, Y602 year 3
ST341	Statistical Genetics	15	2	G30D year 3, G30D year 4, Y602 year 3
ST342	Mathematics of Random Events	15	1	G30A year 3, G30D year 3, Y602 year 3
ST343	Topics in Data Science	15	2	G30D year 3, G30D year 4, Y602 year 3
ST344	Professional Practice of Data Analysis	15	1	G30A year 3, Y602 year 3
ST345	Life Contingencies	15	2	Y602 year 3, G30A year 3
ST401	Stochastic Methods in Finance	15	1	G30A year 4, G30D year 4
ST402	Risk Theory	15	2	G30A year 4, G30D year 4
ST403	Brownian Motion	15	2	G30A year 4, G30D year 4

Code	Name	CATS	Term	Source
ST405	Bayesian Forecasting and Intervention with Advanced Topics	15	2	G30A year 3, G30A year 4, G30D year 3, G30D year 4
ST406	Applied Stochastic Processes with Advanced Topics	15	1	G30A year 3, G30A year 4, G30D year 3, G30D year 4
ST407	Monte Carlo Methods	15	1	G30D year 4
ST409	Medical Statistics with Advanced Topics	15	2	G30A year 4, G30D year 3, G30D year 4
ST410	Designed Experiments with Advanced Topics	15	2	G30A year 4, G30D year 3, G30D year 4
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1	G30A year 4, G30D year 4
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2	G30A year 4, G30D year 4
ST417	Topics in Applied Probability (suspended in 22/23)	15	3	G30A year 4, G30D year 4
ST418	Statistical Genetics with Advanced Topics	15	2	G30D year 3, G30D year 4
ST419	Advanced Topics in Data Science	15	2	G30D year 3, G30D year 4
ST420	Statistical Learning and Big Data	15	2	G30A year 4, G30D year 4
ST909	Applications of Stochastic Calculus for Finance	15	2	G30B year 4, G30C year 4, G30D year 4
ST958	Advanced Trading Strategies	15	2	G30C year 4, G30D year 4

2.17 Year 4 MMORSE Statistics with Mathematics Course Regulations

2.17.1 Loading / Requirements

These requirements are **in addition** to the course regulations for all streams of MMORSE which must also be satisfied.

Students must take the core modules and **at least 60 CATS from List E**. In addition students must choose an appropriate number of modules from List E, Optional Modules and Unusual Options to reach the minimum load.

2.17.2 Core

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Code	Name	CATS	Term
ST415	Statistics Masters Dissertation	30	1, 2, 3
	OR		
EC400	Statistics Master Dissertation in Economics	30	1, 2, 3
	OR		
IB403	Operational Research Dissertation	30	1, 2, 3

2.17.3 List E

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Listed modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Code	Name	CATS	Term
MA377	Rings and Modules	15	2
MA390	Topics in Mathematical Biology	15	1
MA398	Matrix Analysis and Algorithms	15	1
MA3A6	Algebraic Number Theory	15	1
MA3B8	Complex Analysis	15	1
MA3D1	Fluid Dynamics	15	2
MA3D4	Fractal Geometry	15	2
MA3D5	Galois Theory	15	2
MA3D9	Geometry of Curves and Surfaces	15	2
MA3E1	Groups and Representations	15	1
MA3F1	Introduction to Topology	15	1
MA3F2	Knot Theory (suspended in 22/23)	15	2
MA3G1	Theory of PDEs	15	2
MA3G6	Commutative Algebra	15	1
MA3G7	Functional Analysis I	15	1
MA3G8	Functional Analysis II	15	2
MA3H0	Numerical Analysis and PDEs	15	2
MA3H2	Markov Processes and Percolation Theory	15	2
MA3H3	Set Theory	15	1
MA3H5	Manifolds	15	1
MA3H6	Algebraic Topology	15	2
MA3H7	Control Theory	15	2

Code	Name	CATS	Term
MA3J2	Combinatorics II	15	1
MA3J9	Historical Challenges in Mathematics	15	1
MA3K0	High Dimensional Probability	15	1
MA3K1	Mathematics of Machine Learning	15	2
MA3K4	Introduction to Group Theory	15	1
MA424	Dynamical Systems	15	1
MA426	Elliptic Curves	15	2
MA427	Ergodic Theory	15	2
MA433	Fourier Analysis	15	1
MA453	Lie Algebras	15	1
MA475	Riemann Surfaces (suspended in 22/23)	15	2
MA482	Stochastic Analysis	15	2
MA4A2	Advanced PDEs	15	1
MA4A5	Algebraic Geometry	15	1
MA4A7	Quantum Mechanics: Basic Principles and Probabilistic Methods	15	1
MA4C0	Differential Geometry	15	1
MA4E0	Lie Groups	15	1
MA4E7	Population Dynamics: Ecology and Epidemiology	15	2
MA4H4	Geometric Group Theory	15	1
MA4H8	Ring Theory	15	2
MA4H9	Modular Forms	15	2
MA4J0	Advanced Real Analysis	15	2
MA4J1	Continuum Mechanics	15	1
MA4J3	Graph Theory	15	1
MA4L2	Statistical Mechanics	15	2
MA4L8	Numerical Analysis and Nonlinear PDEs (suspended in 22/23)	15	2
MA4M1	Epidemiology by Example	15	2
MA4M2	Mathematics of Inverse Problems	15	2
ST301	Bayesian Statistics and Decision Theory	15	1
ST305	Designed Experiments	15	2
ST329	Topics in Statistics	15	2
ST332	Medical Statistics	15	2
ST340	Programming for Data Science	15	2
ST341	Statistical Genetics	15	2
ST343	Topics in Data Science	15	2

Code	Name	CATS	Term
ST346	Generalized Linear Models for Regression and Classification	15	1
ST401	Stochastic Methods in Finance	15	1
ST402	Risk Theory	15	2
ST403	Brownian Motion	15	2
ST405	Bayesian Forecasting and Intervention with Advanced Topics	15	2
ST406	Applied Stochastic Processes with Advanced Topics	15	1
ST407	Monte Carlo Methods	15	1
ST409	Medical Statistics with Advanced Topics	15	2
ST410	Designed Experiments with Advanced Topics	15	2
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1
ST413	Bayesian Statistics and Decision Theory with Advanced Topics	15	1
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2
ST417	Topics in Applied Probability (suspended in 22/23)	15	3
ST418	Statistical Genetics with Advanced Topics	15	2
ST419	Advanced Topics in Data Science	15	2
ST420	Statistical Learning and Big Data	15	2
ST909	Applications of Stochastic Calculus for Finance	15	2
ST958	Advanced Trading Strategies	15	2

2.17.4 Optional Modules

The teaching term shown is **for information only** and does not form part of the official course regulations. Variations observed on the module pages and / or university timetable should be considered to be a more definitive source of information.

Optional modules are subject to change from year to year and some modules may be subject to availability / module pre-registration.

Optional modules that do not require an unusual option form are those listed in any stream of the third or fourth year of any MMORSE stream or in the third year of BSc MORSE.

An illustrative table of modules that may be listed in other MORSE streams / programmes is shown below.

This was taken at a single snapshot in time - it is not a definitive guide and students are required to check that these modules are still listed in other streams / programmes.

Code	Name	CATS	Term	Source
EC208	Industrial Economics 1: Market Structure	15	1	G30B year 3, Y602 year 3
EC301	Mathematical Economics 2: Dynamics,	15	2	G30B year 3, G30B year

Code	Name	CATS	Term	Source
	Uncertainty , Asymmetrical Information			4, Y602 year 3
EC303	The British Economy in the Twentieth Century (suspended in 22/23)	15	1	G30B year 3, Y602 year 3
EC306	Econometrics 2: Time Series	15	2	G30A year 3, G30A year 4, G30B year 3, G30B year 4, Y602 year 3
EC307	Macroeconomic Policy in the EU	15	2	G30B year 3, Y602 year 3
EC310	Topics in Development Economics	15	2	G30B year 3, Y602 year 3
EC312	International Economics	15	1	G30B year 3, Y602 year 3
EC313	The International Economy in the Twentieth Century	15	2	Y602 year 3
EC314	Topics in Economic Theory	15	2	G30B year 3, G30B year 4, Y602 year 3
EC320	Economics of Public Policy	15	1	Y602 year 3
EC326	Industrial Economics 2: Strategy , Planning	15	2	Y602 year 3
EC331	Research in Applied Economics	30	1, 2	G30B year 3, Y602 year 3
EC333	Topics in Financial Economics: Theories and International Finance	15	1	G30B year 3, G30B year 4, Y602 year 3
EC334	Topics in Financial Economics: Corporate Finance and Markets	15	2	G30B year 3, G30B year 4, Y602 year 3
EC336	International Trade	15	2	Y602 year 3
EC337	Industrial Economics 2: Market Economics, Competition , Regulation	15	1	Y602 year 3
EC338	Econometrics 2: Microeconometrics	15	1	G30A year 3, G30A year 4, G30B year 3, G30B year 4, Y602 year 3
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15	1	G30B year 3, G30B year 4, Y602 year 3
EC901	Microeconomics A	30	1	G30B year 4
	OR			
EC9D3	Microeconomics B	30	1	G30B year 4
EC910	Quantitative Methods: Econometrics B	45	1, 2	G30A year 4, G30B year 4
EC924	Monetary Economics	15	2	G30B year 4
EC931	International Trade	15	2	G30B year 4

Code	Name	CATS	Term	Source
EC941	Game Theory	15	2	G30B year 4
EC943	Industrial Economics	15	2	G30B year 4
EC9D4	Macroeconomics A	30	1	G30B year 4
	OR			
EC9D5	Macroeconomics B	30	1	G30B year 4
EP304	Introduction to Secondary Mathematics Teaching	15	2	Y602 year 3
EP304	Introduction to Secondary Mathematics Education	30	2	Y602 year 3
IB253	Principles of Finance 1	15	1	Y602 year 3
IB254	Principles of Finance 2	15	2	Y602 year 3
IB2C4	Managing Human Resources	15	1	Y602 year 3
IB2MKT	Marketing in Practice	15	1	Y602 year 3
IB320	Simulation	15	2	G30C year 3, Y602 year 3
IB337	Business Taxation	15	2	Y602 year 3
IB349	Operational Research for Strategic Planning	15	1	G30C year 3, G30C year 4, Y602 year 3
IB352	Applied Optimisation Methods	15	2	G30A year 3, G30C year 3, Y602 year 3
IB357	Investment Management	15	1	G30A year 4
IB359	Derivatives and Risk Management	15	2	G30A year 4, Y602 year 3
IB361	Equality and Diversity	15	1	Y602 year 3
IB368	International Business Strategy	15	2	Y602 year 3
IB370	Managing Strategy in the Digital Era	15	1	Y602 year 3
IB382	Project Management	15	1	Y602 year 3
IB384	Supply Chain Management	15	1	Y602 year 3
IB394	International Finance Management	15	1	G30A year 4
IB395	Finance in New Ventures	15	1	Y602 year 3
IB396	Financial Statement Analysis , Security Valuation	15	2	Y602 year 3
IB3A7	The Practice of Operational Research	15	2	G30C year 3, G30C year 4, Y602 year 3
IB3D8	Corporate Strategy	15	1	Y602 year 3
IB3F2	Company Law	15	1	Y602 year 3
IB3J2	Decision Making Under Uncertainty	15	1	G30C year 3, G30C year 4, Y602 year 3
IB3J3	Mathematical Game Theory	15	1	G30C year 3, G30C year

Code	Name	CATS	Term	Source
	(suspended in 22/23)			4, Y602 year 3
IB3J8	Banks and Financial Systems	15	1	Y602 year 3
IB3K2	Financial Optimisation	15	2	G30A year 3, G30C year 3, G30C year 4, Y602 year 3
IB408	Operational Research for Strategic Planning with Advanced Topics	15	1	G30C year 4
IB410	Mathematical Game Theory with Advanced Topics (suspended in 22/23)	15	1	G30C year 4
IB411	Decision Making Under Uncertainty with Advanced Topics	15	1	G30C year 3, G30C year 4
IB9BS	Supply Chain Analytics	15	2	G30C year 4
IB9BW	Analytics in Practice	15	1	G30C year 4
IB98E	Forecasting	15	2	G30C year 4
IB9EO	Pricing Analytics (suspended in 22/23)	15	2	G30C year 4
IB9HP	Data Management	15	2	G30C year 4
ST313	Third Year Essay / Project (suspended in 22/23)	15		Y602 year 3
ST334	Actuarial Methods	15	1	Y602 year 3, G30A year 3
ST335	Finance and Financial Reporting	15	1	G30A year 3, Y602 year 3
ST338	Actuarial Models	15	2	Y602 year 3, G30A year 3
ST339	Introduction to Mathematical Finance	15	1	G30A year 3, Y602 year 3
ST344	Professional Practice of Data Analysis	15	1	G30A year 3, Y602 year 3
ST345	Life Contingencies	15	2	Y602 year 3, G30A year 3
ST401	Stochastic Methods in Finance	15	1	G30A year 4, G30C year 4
ST402	Risk Theory	15	2	G30A year 4, G30C year 4
ST403	Brownian Motion	15	2	G30A year 4, G30C year 4
ST407	Monte Carlo Methods	15	1	G30C year 4
ST411	Dynamic Stochastic Control (suspended in 22/23)	15	1	G30A year 4, G30D year 4
ST414	Advanced Topics in Statistics (suspended in 22/23)	15	2	G30A year 4, G30C year 4
ST417	Topics in Applied Probability (suspended in 22/23)	15	3	G30A year 4, G30C year 4
ST420	Statistical Learning and Big Data	15	2	G30A year 4, G30C year 4
ST909	Applications of Stochastic Calculus for	15	2	G30B year 4, G30C year

Code	Name	CATS	Term	Source
	Finance			4, G30D year 4
ST958	Advanced Trading Strategies	15	2	G30C year 4, G30D year 4

2.18 Year 4 MMORSE: Outcomes

2.18.1 Requirements for Award

2.18.1.1 Students starting in or before 20/21

For an **Integrated Master's degree**, a candidate must pass in the final three years contributing to the degree classification, **whole modules equating to at least 258 CATS** in total, including **at least 90 credits taken in the final year**. In addition, the dissertation module must be passed.

In awarding the classification the Board of Examiners expects to see marks in that class or higher in at least 48 CATS in Year 4, from whole core and listed modules.

2.18.1.2 Students starting in or after 21/22

For an **Integrated Master's degree**, a candidate must have studied at least 480 CATs and passed **at least 360 credits** over the four years, of which **at least 90 CATS must be of level 4+ modules** (NB. Level 4+ should be interpreted as:- xx4xx, xx5xx, xx9xx.) Progression rules applied in earlier years mean that a candidate will have passed enough credits if they pass 90 CATs in their final year providing that overall 90 CATS are at passed at level 4+.

In awarding the classification the Board of Examiners expects to see marks in that class or higher in at least 48 CATS in Year 4, from whole core and listed modules.

Further information about degree classification rules can be found at the university's undergraduate degree classification conventions pages.

2.18.1.3 For students entering in 19/20 or before

The pass mark for all modules is 40% or above.

2.18.1.4 For students entering in 20/21 or after

The pass mark for level 1/2/3 is 40% or above. The pass mark for level 4+ modules is 50% or above, irrespective of the academic year in which a module is taken. Level 4+ can be broadly interpreted as module codes xx4xx, xx5xx, xx9xx, however the module catalogue should be consulted as the definitive guide.

2.18.2 Outcomes from the Summer Examination Board

The possible outcomes of the fourth year Summer examination board for MMORSE are as follows: a. Graduate with honours degree at Masters award b. Graduate with honours

degree at Masters award with optional resits. c. Required to take further attempts for Masters level d. Required to take further attempts for a BSc award

Students may choose whether to take optional further attempts but should note that graduation will be delayed if the assessments are taken.

Students who have not met requirements for an honours degree will be entered for further assessments. Students who are eligible may choose to be awarded a pass degree or exit qualification instead of taking further attempts.

2.18.3 Outcomes from the September Examination Board

The possible outcomes of the fourth year Summer examination board for MMORSE are as follows: a. Graduate with honours degree at Masters award b. Graduate with honours degree at BSc award c. Graduate with pass degree at BSc award d. Required to take further attempts for BSc award e. Required to withdraw

Students who have not met requirements for the award of a BSc honours or BSc pass degree but have accepted mitigation for September reassessments or sat uncapped further first attempts in September will be required to take further attempts at the next opportunity. The next opportunity will usually be the following academic year at the normal time for the assessment or examination.

Students who are required to withdraw may be eligible for an exit qualification.

3 Module Selection and Course Transfers

3.1 Module Codes and Links

The first two letters of a module code indicate the Department that delivers the module. The codes and links to the module information pages for Departments that deliver modules often taken by students from Statistics are shown below.

Code	Department
IB	Warwick Business School
CS	Computer Science
EC	Economics
IL	Institute for Advanced Teaching and Learning
LL	Language Centre
MA	Mathematics
PH	Philosophy
PX	Physics
ST	Statistics

The third digit of the module code usually indicates the level of the module.

Third digit of module code	Usual Year / Course	Level	FHEQ Level (for exit awards)
1	First year undergraduate	1	4
2	Second year undergraduate	2	5
3	Third year undergraduate	3	6
4	Fourth year integrated masters / postgraduate taught	4	7
9	Fourth year integrated masters / postgraduate taught	4+	7
0	Second or third year undergraduate (IATL modules)	2 or 3	5 or 6

3.2 Module Choice

3.2.1 Advice on Module Choice

There is a large range of optional modules for most degree courses. Compulsory modules and some of the optional modules are listed in the body of this handbook. However, in principle, it is possible to take most modules available anywhere in the University as an unusual option but permission must be sought via an unusual option form.

In considering which options to take, the following points may help:

- The department and its partner departments provides module fairs. These fairs are notified in department newsletters and scheduled on Tabula. Module Choice Guidance is provided including a student co-created Statistics Module Choice Booklet.
- Think about where your interests lie and what the module might lead to later.
- Check the prerequisites of modules that you wish to take in the current year. Also, consider which optional modules might be pre-requisites for modules that you wish to take in later years.
- You can check a module timetable via Tabula.

  In the drop down box called “Modules” type out a module code to see the timetable for that module and press enter. Repeat until you have selected all modules that you are considering.

  Although every effort is made to avoid timetabling clashes, given the large number of modules on offer a small number of clashes are usually unavoidable. You should bear these in mind when selecting optional modules.
- You can try a module and deregister later if you decide not to offer it for examination. However, make sure that you adhere to deregistration rules and deadlines.

- Talk to your personal tutor and to your friends (especially those who have taken the module before!). However it is important to be aware that individuals have different backgrounds, preferences and experiences so make sure that you consider their opinions and feedback in context.

3.2.2 Overloading

It is permitted to take more than the minimum number CATS of modules - this is referred to as an overload.

Additional modules taking your load over 120 CATS may have no effect on your overall average mark for the year, although they will still appear on your HEAR transcript. See the section on Year Marks for information about how year marks are calculated.

An extra module is a big commitment and you must be careful not to take on too much.

3.3 Module Registration

As a student it is **your responsibility** to ensure that you are **registered for the correct modules** and assessment methods via the systems required for each module and that you do this at the correct specified times.

You should be aware that the module registration system may allow you to register for module combinations that may not comply with course regulations. Therefore it is important that you check your module choices against the course regulations: see Section 2 of the handbook.

You should note that some departments run separate module registration systems and / or preregistration. It is your responsibility to ensure that you have registered for modules using both systems if required.

Modules that are not listed in the option lists of your year require departmental approval via an **unusual option** form. You will be deregistered if you do not complete an unusual option form.

3.3.1 Registration

You will need to enter all of your module choices via the University Online Module Registration System. You will find your core modules are already entered, only requiring the addition of listed and optional modules.

If your core modules or optional modules available for selection are showing incorrectly there is likely to be a problem with your "module diet". You should contact the Statistics Support Office with full details including your ID number, year of study, your course and information about any recent course transfers and a description of the modules that are showing or not showing incorrectly.

Module registrations on eVision can only be amended (added and removed) during the following periods:

- Two weeks prior to start of term 1
- Weeks 1-3 of term 1
- Weeks 1-3 of term 2

All modules that you wish to take **must be registered by the end of week 3 of term 2**, you cannot add modules after this time. You may only remove a module if it is permitted under the **deregistration rules** relating to coursework and groupwork.

Warwick Business School has a separate module registration system in addition (my.WBS). Please note that if you register on eMR but not on my.wbs (or vice versa), for an IB module you will not be considered to have registered for the module.

To register for WBS modules you must complete the WBS module application which normally opens around Easter and closes around the start of term 3. You will be informed if your application for a module has been successful. The module application system will reopen over the summer for all modules which have places remaining available.

You must adhere to the deadline for registering for modules, otherwise we will not be able to use marks awarded for that module.

The initial information you supply in eVision does not involve you making a permanent commitment to take the selected modules, nor stop you from following other modules.

However, you must ensure that all details held on eVision are **correct at the time of the final deadline for registration** as these details constitute your final examination timetable.

Students are **strongly advised** not to leave finalizing the registration until the last day.

3.3.2 Prerequisites

Different departments have different rules about whether you can take modules if you do not have the stated pre-requisites.

Economics The stated pre-requisites are strictly enforced and you will not be permitted to take a module if you do not have the required pre-requisite. You will be removed from a module if you registered for it and have not taken the required pre-requisites.

Statistics A module leader may permit you to take a module if you do not have the stated pre-requisites and they believe that you have an equivalent background from alternative sources.

Computer Science A module leader may permit you to take a module if you do not have the stated pre-requisites and they believe that you have an equivalent background from alternative sources. However, please note that a module leader will make a judgement based on the information available to them at the time and you may still be disadvantaged by not having the stated pre-requisites.

Mathematics You are permitted to take Mathematics modules by adding them to your module registration without consulting the module leader. It is your responsibility to ensure that you have sufficient background understanding for the module.

If you are permitted to take a module without the stated pre-requisites it is at your own risk, even if you have the module leader's permission. The module leader will make a judgement based on the information available to them at the time, but they will not have full knowledge of your background and you may still be disadvantaged by not having the stated pre-requisites. A lack of appropriate background is **not** an eligible reason for **mitigating circumstances**.

3.3.3 Deregistration

You can deregister from a module by amending your module selections in eVision.

It is a university rule that if assessed work or class tests which contribute more than 10% towards the final mark for a module are submitted by the student for credit then it is no longer possible to deregister from the module even if this takes place before the general deadline for deregistration. This rule is strictly adhered to for ST modules however some Departments waive this rule. If you want to deregister from a non-ST module after completing more than 10% of the assessed work you are advised to discuss with the support office of the Department delivering the module.

Additionally it is not permitted to deregister from a module with a substantial groupwork component after the end of week 3 of the module. Modules that are known to have a substantial groupwork component include IB349/IB408 Operational Research in Strategic Planning/with advanced topics, IB3J2/IB411 Decision Making under Uncertainty/with advanced topics, IB352 Applied Optimisation, ST332 Medical Statistics, ST344 Professional Practice of Data Analysis and ST409 Medical Statistics with Advanced Topics. However it should be noted that any other modules with a substantial coursework component will also have restricted deregistration.

Students who were registered for an overload by the end of the module registration deadline can deregister modules during the following additional periods;

- Week 10 of term 2
- Week 1 of term 3 (via Support Office)

You must adhere to the deadline for deregistering; modules that you are registered for after this deadline cannot be removed and will appear on your transcript.

To deregister from WBS modules you should email the WBS Support Office to notify them.

3.3.4 Preregistration

Some departments run preregistration for modules available to continuing students during the previous academic year. Modules with preregistration usually have a maximum possible number of students and will not offer places after the cap is reached. Early preregistration may required to secure a place on a module.

All module choices that do not appear in course regulation lists must have an unusual option form submitted **in addition** to preregistration.

Known information about Departments / modules with preregistration is shown below however information about preregistration is usually sent out by email. You should check your emails regularly and follow instructions to ensure that you preregister for any popular modules that you may be interested in.

WBS

Applies to: All non-core IB modules (including listed modules)

Location of preregistration: my.WBS

Timing: Early May

Additional notes: There is a maximum CATS of IB modules that students from Statistics can preregister for. See course notes on regulations for each year for more details. The initial preregistration is NOT first come, first served and all applications during module application will be considered at the same time. Once students are confirmed on modules the application system will reopen (likely to be late July / early August) and students can join any modules that have places remaining.

Statistics

Applies to: ST340 Programming for Data Science and ST344 Professional Practice of Data Analysis

Location of preregistration: Module Information pages

Timing: Approximately Term 3 and early summer of previous academic year. Preregistration opening is notified in departmental newsletters.

Additional notes: Completion of form does not guarantee a place although the time that the form is submitted may be a factor. Criteria for allocation of places on modules are listed on the module information pages.

Economics

Applies to: All non-core economics modules

Location of preregistration: Economics preregistration webpage

Timing: Term 3 of previous academic year onwards.

Additional Information: Completion of form does not guarantee a place. A separate module choice "survey" takes place in term 3, which is used to plan timetabling and room sizes.

Language Centre

Applies to: All Language Centre modules

Location of preregistration:

- Students should first complete an online enrolment form.
- Attendance at an online enrolment discussion may be required.

Timing: Opens 12 pm on Friday 23th September 2022 Closes Monday 17th October 2022

IATL

Applies to: All IATL modules

Location of preregistration: IATL preregistration webpage

Timing: Approximately late Easter onwards.

Additional Information: Completion of form does not guarantee a place although the time that the form is submitted may be a factor. Criteria for allocation of places on modules is shown on the IATL module page.

3.4 Unusual Options

An unusual option is a module that is not listed within the option lists of your current year. Unusual options allow you to take modules tailored to your individual interests.

Before considering unusual options, make sure that you have registered for any optional modules that you might need as prerequisites for modules you wish to take in later years. Also, consider your overall workload.

To take a module as an unusual option you **must first check** the Restrictions on unusual options do not forbid the option. You must then obtain permission from the module leader (or delivering department) and then your personal tutor. You must email the module leader to obtain permission. Then include in your email to your personal tutor the following information.

1. A request for email confirmation of permission to take the module as an unusual option.
2. Your course and year of study.
3. Your reasons for wanting to take the module.

After obtaining the agreement of the module leader and your personal tutor, you will need to upload the email confirmations to the unusual options submission webpage. The Support Office will receive the information and will send to the Course Director for approval.

3.4.1 Restrictions on Unusual Options

In most cases there are no problems in obtaining everyone's agreement. However, there are some restrictions that you **must** note:

- Subject to approval by the Course Director, students may take **up to 30 CATS** of unusual options provided their total CATS load does not exceed the specified maximum load for their respective year.
- First and second year modules may not be taken as unusual options by students in their final years (including the third year of an integrated Master's degree) with the exception of Language Centre modules.
- Language modules with stage 1 learning outcomes may not be taken by students in their final years (including the third year of an integrated Master's degree). While stage 1 "Beginners" level modules are not allowed, "Beginners accelerated" modules are permissible.
- Modules that are listed as core modules in subsequent years may **not** be taken as unusual options.
- Institute for Advanced Teaching and Learning modules are offered in two versions, one for final year students (including the third year of an integrated Master's degree) and one for intermediate year students with differentiated learning outcomes. Each module has two module codes, one for intermediate year students, usually of the form IL0xx, and one for finalist students, usually of the form IL1xx. You must ensure you register for the correct module.

3.4.2 Deadlines

Forms for Term 1 modules should be submitted to the Student Support Office no later than the **end of week 2 of term 1**. The Support Office will attempt to communicate with students about missing forms during week 3. If you have not submitted the form by the **end of week 3 of term 1** then you will be de-registered from the module.

Students may register for Term 2 and Term 3 modules at the start of Term 2 provided a signed unusual option form is submitted no later than **end of week 2 of Term 2**.

Failure to submit the forms within the time-frame specified above will result in your de-registration from the relevant module.

3.4.3 More About Unusual Options

The Institute for Advanced Teaching and Learning (IATL) offers a number of interdisciplinary modules which may be taken as unusual options in year 2 and above subject to approval. Further information on these modules can be found at the IATL website.

The Language Centre, located on the ground floor of the Humanities Building, offers academic modules for exam credit in a variety of languages at a wide range of levels. Most modules can be taken as year-long 24 or 30 CATS modules; a small number of modules are available as 12 or 15 CATS modules running only for one term. Modules approved by the Course Director as an unusual option are free to undergraduates who register for them formally as part of their degree. Academic modules may also be taken independently from degree study; a separate fee is required for this.

If you are looking for something a little more relaxed, then instead of academic modules you may consider the Lifelong Language Learning programme. Classes are not as intense as academic modules and are taken by students, staff and members of the public. A course fee applies.

The University of Warwick has a central module catalogue listing modules available across departments.

3.5 Course Transfers

You will need to **complete a Statistics course transfer form** for any course transfer between courses or course variants in the Statistics Department.

The Statistics course transfer form is a Word document which contains prompt questions and requires completion by you, and by your personal tutor or a representative. MMORSE students are permitted to make their initial stream selection via eVision without a course transfer form. All other course transfers will not be approved without a completed form and sign off by the course directors.

The Statistics course transfer word document form should be used for all course transfers, **except intercalated years**. You will need to download, complete and then upload the form to the Statistics Course Transfer submission area.

There is a course transfer form available on eVision - you may choose to complete this form **in addition** if you wish. However the Support Office will complete the form in eVision for you based on the information in the Statistics course transfer.

Please note that course transfer requests received after the end of week 1, term 2 will not be processed until after the examination boards for that academic year.

3.5.1 Transfers: Important Information for International Students

Overseas students should check visa implications with Warwick Immigration Services before requesting any course transfer. Depending on the nature of the degree change, different processes need to be followed and deadlines apply. In some cases (such as changing from a four-year course to a three-year course) it may be necessary to return to the home country and apply for a new visa from there.

See the International office webpage for details and updates, and their contact details page for remaining open questions.

3.5.2 Transfer to a Different Statistics Degree

Transfers to a different Statistics degree are usually possible in any year if you have met the requirements for that course. Students interested in transferring course should contact the course director of the new course in the first instance.

- **Transfers to MathStat**. Students wishing to transfer to MathStat must consult MathStat course handbook for the relevant course regulations.

- **Transfers to Data Science**. Students wishing to transfer to Data Science must consult Data Science course handbook for the relevant course regulations. In particular, students must have completed the relevant core modules (in, for example, computer science, statistics and business) and relevant optional modules to meet the course regulations.
- **Transfers to MORSE**. Students wishing to transfer to MORSE must consult MORSE course handbook for the relevant course regulations. In particular, students must have completed the relevant core modules (in, for example, economics, statistics and business) and relevant optional modules to meet the course regulations.

Note that, from 22/23, the MAxxx modules provided by the Mathematics Institute for the MORSE, Data Science, and Mathematics & Statistics are different across these three programmes. Although, it is not anticipated this change will impact students that started their courses before 2022/23, those that take a period of temporary withdrawal or resit without residence that plan to transfer from MORSE/Data Science to Mathematics & Statistics may be required to work independently through additional mathematics material in order to be prepared for the beginning of year 2.

3.5.3 Transfer to Intercalated Year Variants

Statistics students may apply to take a degree course which includes "with Intercalated Year" in the title, which entails four years of study rather than the usual three for a BSc, or five years of study instead of the usual four for an integrated Masters. Registration for these degrees should take place as early as possible in the previous year. For BSc students the intercalated year takes place at the end of the second year. For integrated Master's students the intercalated year can also take place at the end of the third year instead. On their return, students join the final year of study.

The intercalated year entails either working in industry, or studying at a university abroad and must be approved by your Personal Tutor, the Intercalated Year Coordinator and the Course Director.

Please see the intercalated year handbook for more details, including the approval and course transfer process.

3.5.4 Transfer from BSc to Integrated Masters

Transfers from BSc to Integrated Masters variants of the same degree can be requested at any time until the end of week 10 of term 1 of the third year. If requested during the third year, the transfer should take place **as soon as possible** and you must not request to defer it until the end of the year. If you are on a Student/Tier 4 visa then you may be asked to renew your Confirmation of Acceptance of Studies (CAS), in which case you must do this **as soon as possible**. Your course transfer cannot take place until a CAS is requested. If your approved course transfer has not taken place by the end of week 3 of Term 2 of the third year then it may be rescinded.

Transfers to the Integrated Masters during year 3 are subject to having met the Integrated Masters progression requirements from year 2 and having taken, or being able to take, module choices that meet course regulations for the new variant. Where Student Finance or Local Authority funding for the fourth year is a consideration, it is advisable to make this decision earlier rather than later. For advice on fee implications please consult with Student Finance.

3.5.5 Transfer from Integrated Masters to BSc

Transfer in the third year

Students who request a transfer to the BSc degree up until the end of week 10 of term 1 in year 3 will have the course transfer processed and will need to choose modules and / or amend module registration to satisfy the course regulations for year 3 of the BSc degree.

After week 10 of term 1, students in year 3 may still request to graduate with a BSc. However, such students are expected to continue to follow module registrations that comply with the course regulations of year 3 of the integrated Masters degree. These course regulations are deemed to satisfy the requirements for the award of a BSc.

Students registered on an Integrated Masters who know that they wish to graduate with a BSc should submit a course transfer request by the end of week 7 of term 3. Students who are requesting a course transfer to the BSc after week 7 of term 3 may not graduate in the same academic year. If you are considering graduating with a BSc but have not made a final decision you may request that the examining board consider your BSc classification by contacting the support office.

Where there are modules on the integrated Masters only (including 3rd year modules) which are associated with actuarial exemptions, students who elected to leave without completing the 4th year of the programme would not be eligible for these exemptions. This means that a student who takes a module in their third year that is listed on its webpage as "only available to those on four year degrees", who then graduates with a degree which is NOT an integrated Master's degree, will no longer gain the actuarial exemptions the module would have otherwise granted them. This is true even if the student is allowed to remain registered on the module in question.

Transfer after the end of the third year

Transfers from the Integrated Master to the BSc can be requested until the end of week 10 of term 1 of the fourth year. Requests to graduate early received after this date would only be considered in exceptional circumstances. Further information on permanent withdrawals and the relevant form are available at the Student Records webpage.

Students who have started their fourth year should consult with Student Finance regarding the financial implications before electing to graduate with a BSc. Furthermore, overseas students are asked to consult beforehand with Immigration Services. Students who have already started their fourth year and transfer to a BSc will graduate with the same cohort at the end of the academic year.

Note that decisions taken to graduate with a BSc after module registrations have been made in the 4th year may result in the student HEAR (Higher Education Achievement Report) transcript including the modules which were due to be taken in the 4th year with a mark of zero.

3.5.6 Transfer to a MMORSE stream

Students on the MMORSE degree course will need to transfer to one of the MMORSE streams prior to the start of the third year. The course transfer can be completed online at the student records portal eVision.

Students may change stream at any point provided their module registrations satisfy or can be amended to satisfy the course regulations of the destination stream for both the third and fourth year.

3.5.7 Transfer to a Different Department

Students who wish to transfer into the first year of a degree run by a different department should contact the admissions tutor for that Department in the first instance. It is usually not possible to change course into a different department and continue within the same academic year after week 3 of term 1.

It may possible, with the permission of the relevant department, to transfer directly into a later year of study in a closely related degree schemes such as Mathematics, Mathematics and Economics, and so on. Students wishing to transfer courses into a later year should contact the Course Director or Director of Undergraduate Studies for that programme.

4 Teaching, Learning and Study

4.1 Teaching

Covid-19 Arrangements

From 2022-23 onwards we expect teaching delivery of Statistics (ST) modules to be on-campus and in-person, following the standard module description which can be found by visiting the relevant module webpage.

We understand, however, that some uncertainty still remains and we will make provision for missed in-person lectures (e.g. lecture capture for live lectures, pre-recorded lectures or detailed lecture notes).

For more up-to-date information please consult the teaching and learning web page.

The main form of teaching is the traditional lecture course. Lectures are usually very condensed and you are unlikely to understand everything the lecturer does at the time and

you must use your independent study time to review this material. In addition, most lecture courses in the first two years are supplemented by tutorials, supervisions, seminars or classes (the name varies according to the department concerned). Because the number of students in each group is usually quite small, these tutorials form your main opportunity for asking questions and clearing up difficulties. If you still have questions, you can ask the lecturer directly during their office hours.

For first year students the Mathematics Department arranges supervisions of one hour per week with a research student. These supervisions cover all Mathematics courses. For other courses and departments, the arrangements are usually made by individual lecturers.

The lecturing style in Economics is somewhat different from that of other departments. Background reading and the preparation of additional notes which amplify and explain the lectures are usually essential.

Only around 25 percent of your study time is spent in lectures and tutorials. The remaining 75 percent is for independent study. It is impossible to overstate how important this time, that you spend working on your own or with friends, is to developing your understanding of the material. Lecturers usually provide additional material (exercise sheets, extra reading) and working through this is essential.

If you leave this work to the end of the year, you will find when revising that you are unable to prepare properly for the exam because you will not have developed the necessary understanding and skills. A loose analogy is that the exams are the equivalent to running a marathon, and if you haven't spent the year training properly then you will not have developed the fitness that is necessary to do well in the race.

4.1.1 Tutorial / Seminar Sign Up

Tutorials / seminars are small group sessions and provide the opportunity to explore lecture material. You will often be asked to prepare some work before the tutorial / seminar.

For some modules (often in earlier years) you are automatically allocated to a tutorial / seminar. This allocation is based on your Tabula timetable on the day of the allocation. If another class moves or you change your module registration, then a class can arise after your allocation. The Statistics Support Office stats.ug.support@warwick.ac.uk can advise you on how this clash can be resolved.

For other modules (typically in later years) tutorials / seminars can be self-managed. You will receive an email from Tabula notifying you that you are able to sign up to a group. You can follow a link from the email or you can navigate to the sign up page on Tabula. The group name may contain details about the timing of the sessions.

It is your responsibility to ensure that you do not have clashes with self-sign up groups. Please note that groups that are allocated by self-sign up are first come-first served so it is worthwhile signing up as soon as you receive the email. If you cannot find a session with available space that does not clash with other scheduled teaching sessions please contact

the support office (this does not apply for extra-curricular activities or non-preferred timing).

If you have changed group due to a timetable clash and you have submitted work, then it is possible your work may be marked by your previous class tutor.

4.2 Developing Understanding: Engagement and Feedback

You will need to take responsibility for being an independent learner and take advantage of all of the available opportunities to build your understanding and obtain feedback. If you do not engage fully and take an active role in developing your understanding you will not reach your potential.

Feedback is an essential part of learning as it identifies gaps in your knowledge and understanding and also provides guidance on how to improve. Feedback comes in many forms including;

- Discussion with other students, for examples in tutorials or seminars
- Conversations with teaching staff, for example asking questions during / after a lecture
- Written feedback on submitted coursework
- Comparing your answers to model solutions
- Using model solutions or mark schemes to mark other students' work and identify key features of good work
- Using cohort level examination feedback to identify common mistakes
- Using textbooks to attempt problems with a different style

It is important that you attempt all coursework questions. This will give you immediate feedback on whether you have assimilated the material in the lectures and can apply it to example problems. Some modules may include self-assessment questions that are not submitted for marking, these form an important part of your self-regulated learning.

Keep in mind that mathematics takes time, so if you cannot solve a problem straight away read the lecture notes or a textbook and then try again. If you are still stuck on non-assessed work, talk to some of your fellow students. They might be able to explain the material that you have not understood and pick up on misconceptions.

Important. When preparing your assessed work, please ensure you follow the assessment instructions regarding consulting and working with other students. In particular, some assessed work must be entirely your own work. In these cases, consulting with other students on assessed work may lead to you cheating through collusion, even if inadvertent. Please read the section on Academic Integrity to ensure you know what constitutes cheating and academic misconduct, and to get advice on collaboration.

All modules have online forums where you can post questions that will be read by your fellow students (and the module leader).

Don’t be shy to ask questions. The fact that you have questions shows that you are engaging with the material!

Contribute to the process by posting answers on the forum or explaining material to your fellow students. Explaining mathematics will help you develop your communication skills and deepen your understanding!

Make sure to hand in all coursework in a timely fashion. Even if the coursework is not for credit it is an important tool to obtain feedback and you limit your own learning if you do not submit your work. If you have managed to produce only partial solutions to the problems it is important that you submit these as this will influence how and what material the tutor is going to cover in the tutorial. Once coursework has been returned make sure to read carefully through the comments.

If you are in doubt as to what the comments mean please ask the marker who will be happy to explain. If solutions are provided please compare these carefully to your own work. But keep in mind that attempting your own solutions engages you in much deeper learning than simply noting a provided solution.

Participate actively in lectures and support classes like tutorials by providing answers to questions but also by asking questions. This will give the lecturer or tutor a very immediate way to provide feedback to you. To do this effectively it is important that you prepare by revising your lecture notes and attempting the problem sheets.

Textbooks often have additional problems and solutions for you to attempt. A text book may explain the concepts in a different style, or use different notation. Whilst this may seem daunting, using a different source is one of the best ways of developing your understanding of the topics.

All lecturers in Statistics have office hours and they are happy to see students during these times. Module leaders will be happy to answer questions regarding their modules, although you should make sure you have spent some time on revision so that this can happen effectively. Please make sure to take note of the office hours. They are usually advertised next to the lecturer’s office door, their department web-page or module page. Some staff also advertise these on their web pages or state them at the start of the module.

Cohort level feedback for examinations is available on the Statistics Module webpages.

Finally, your personal tutor is available to provide general academic advice. Personal tutors offer office hours in which they are happy to receive students and provide feedback on their overall academic performance.

However, personal tutors should not typically provide assistance on the academic content of individual modules. For this you should consult with the relevant module leader as detailed above.

4.3 Attendance and Engagement

Our duty as a department is to deliver a coherent degree course with well-presented lectures backed up by support, usually in the form of small classes. Your duty is to try hard to learn, and not to impede the attempts of others. In particular this means that you should attend lectures and support classes, having prepared for them by revising prerequisite material and by attempting all example sheets promptly. A failure to do this usually leads to boredom (through lack of understanding) and an inadequate performance.

Attendance at lectures and tutorials does not contribute formally to the award of a degree, nevertheless it is our expectation that you attend these. We collect records of attendance and work handed in for tutorials which become part of your academic record, even if the work is not for credit towards the assessment of a module. Personal tutors will see these records and will discuss your progress and engagement with the course at their meetings with you.

We are required by the University to monitor a set number of separate 'points of engagement' each year for all undergraduate and postgraduate students in the Department, called 'monitoring points'.

We have deliberately chosen the points of engagement to be activities which it is in your interest to do anyway (meeting a project supervisor, attending classes of certain core modules, etc). You should therefore comply with all of these without fail.

Your monitoring points are listed in your Tabula profile under the tab called attendance. The detailed list of monitoring points for different statuses of students can be found at the Monitoring Points webpage.

If you are unable to attend a monitoring point it may be possible to record the point as an authorised absence. You should complete the online form for absence as soon as you are aware that you will not be able to attend. You must submit the request before the monitoring point; retrospective application for absences cannot be authorised.

The principles of the mitigating circumstances policy will be applied to determine whether the absence will be marked as authorised or not.

International students should be particularly aware of the consequences of not meeting the required points of engagement. The Academic Office is obliged to report to the UK Visas and Immigration department of the Home Office if any student has been found not to be engaging with and attending their degree course. This has serious implications for your visa status. A record of all monitoring points for all students will be kept by the Student Support Office, who will regularly check to see if any students are missing monitoring points.

If a student misses three monitoring points in an academic year, then the student will be required to meet with their Personal Tutor to discuss the cause of disengagement.

If a student misses any further monitoring points in a year, dependent upon circumstances, the student will be required to meet with the Senior Tutor or corresponding Year Tutor.

If a student misses eight or more monitoring points they will be deregistered from their degree programme.

If an international student misses six or more monitoring points, visa sponsorship will be withdrawn and the student will be temporarily or permanently withdrawn.

If a student is absent for a long period of time, or is unresponsive to requests to meet with Personal Tutor, Year Tutor, or Senior Tutor after missing monitoring points, the department will seek to have the student withdrawn as stipulated in Regulation 36.

Full information is available in University Regulation 36 – Governing Student Registration Attendance and Progress.

4.4 Study Skills

It is important to understand that university education is based on independent study. Lecture courses are very compressed. You will not learn everything from the lectures. You will need to spend time supplementing the lecture material, filling in the gaps, working through examples, and studying textbooks.

Each module has an associated CATS weighting which you can use as a guide: a CAT represents 10 hours notional work so a 12 CATS module may contain 30 hours of lectures, 60 hours of independent study and 30 hours of revision, nearly all of which is also independent study.

Here are some specific recommendations to think about:

- Plan to spend 35-40 hours per week on academic work in term-time. However be flexible in order to give more time to any core modules which you are finding difficult.
- Be prepared! Ensure that lecture notes are re-read/understood before the next lecture. Always consult the textbook(s).
- Attempt example sheets as soon as possible — easy questions check/aid comprehension, harder ones deepen it.
- Attempt to understand the direction of a module (read the Aims and Objectives) — try to write a brief narrative or commentary on your notes at the halfway mark and again at the end.
- Praise and reward yourself when you perform well or understand something difficult.
- A sufficient amount of sleep at night is important for maintaining your cognitive abilities for studying.

5 Examinations and Assessment

The Department of Statistics adopts the University Assessment Strategy.

In addition:

- The department commits to producing an annual Assessment Handbook describing in detail the assessment procedure for each STxxx coded module. These procedures will include the format of assessment (e.g. the breakdown between examination and coursework) and the timings and due dates of any coursework.
- Whilst acknowledging that timetabled examinations will form the majority of the assessment on most STxxx coded modules, the department commits to using a range of assessment methods including group work and projects across its programmes of study.
- The department uses plagiarism detection software (e.g. TurnitIn) where appropriate, and this will be routine on M-level dissertations. Please see the section on Academic Integrity to ensure you know how to avoid plagiarism.
- The Statistics Teaching Committee will retain responsibility for reviewing the balance of assessment methods across the degree programme.

5.1 Examinations

Modules, Marks and Assessment team is responsible for organising university examinations. The Modules, Marks and Assessment webpages contain comprehensive information about examinations.

Students are responsible for ensuring that they attend the correct examinations and comply with the examination regulations.

There are three main periods during which examinations may be held which usually fall in the week ranges shown below;

- January - Week 1 Term 2
- Spring - Weeks 1-2 Term 3
- Summer - Weeks 4-9 Term 3

A small number of modules have examinations outside these main periods.

The examination timetables and the dates for release of the examination timetable will be published on the Modules, Marks and Assessment webpages. Some departments run online examinations. Normally all ST-coded exams will be taken in-person.

All our exams, including solutions and marking scheme, are moderated and checked by an internal member of staff and all examinations are also checked by an external examiner. The external examiner also ensures assessments are set at the appropriate level and that marking/moderation are carried out to correct standards.

Moreover, the Department of Statistics convenes a Scaling Committee to consider whether an assessment should be scaled. Scaling is a process by which a set of marks is raised or lowered in order to properly calibrate the performance of the cohort in terms of the achievement of learning outcomes and grade descriptors. Thus the Scaling meeting is a safeguard to ensure you are not unduly advantaged or disadvantaged because of the assessments you took. In Statistics, all exams are systematically reviewed to determine whether scaling is necessary; in practice scaling is seldom required. It is normal

departmental practice to indicate when an exam has been scaled, usually alongside exam cohort feedback. Scaling employs a monotonic piecewise-linear mapping from (0,0) to (100,100). For example, the mapping (0,0) - (30,40) - (100,100) would raise a mark of 30 to a mark of 40 and all other marks would be linearly interpolated. We will never use a scaling formula which would convert a mark above the module pass threshold into a failing mark. Other departments employ scaling, though the details may be different.

Past papers are held in the university database.

5.1.1 Calculators in Examinations

- Calculators must not be passed from candidate to candidate during the examination.
- Responsibility for the calculator's proper functioning and acceptability is entirely that of the student.
- Students taking examinations other than those of the Department of Statistics must ascertain the regulations governing the use of calculators from the Department concerned.

In particular, calculators are not allowed in examinations organised by the Mathematics Department (these are all MAxxx module exams). In general, the same rule applies to tests for credit in MAxxx modules, unless students are otherwise informed by the lecturer running the test.

For examinations where calculators are permitted, the Department of Statistics follows the University rule which states that, except for the display of error or function messages, calculators with non-numeric displays are not allowed. In other words prohibited calculators are those which can accept alphabetical data. Note that this includes most graphical calculators of the type acceptable in GCSE and A-level examinations. It is your responsibility to ensure that your calculator fulfils the University's criterion and that your calculator is not of the prohibited type. Otherwise you may find yourself denied the use of your calculator and be involved in disciplinary proceedings.

Suggested suitable calculators for incoming students which are in line with recommendations from the Computer Science Department are Casio fx82, fx83 or fx85. All of these are available from SU and from well-known retailers. They are also reasonably priced.

5.2 Coursework

Different departments have different conventions, and normally the rules of the Department teaching the module apply. The following information relates to modules delivered by the Department of Statistics, excluding those that are only available to students on the MSc in Mathematical Finance.

5.2.1 Marks and Grades

All coursework marks for ST modules will be made available to you in Moodle in the Grades section of the Module pages. The marks as shown in Moodle will be used to calculate the module mark. You are responsible for checking that the marks recorded in Moodle are

accurate and reporting any issues or errors (such as if you believe a penalty has been incorrectly applied) to the Statistics Support Office within 10 working days of the end of the term in which the assessment took place.

5.2.2 Deadlines, Penalties and Mitigation

Assessed work usually comes with a deadline for completion. The department and SSLC consider these essential to ensure fairness to all the students doing the work and to the markers. Deadlines are enforced by penalising late work.

The Assessment Handbook contains the deadlines and additional detail about the assessments for all Statistics modules.

The normal deadline for coursework is 1 pm.

Penalties will apply if work is submitted more than 1 minute after the deadline unless an extension or waiver is granted.

The magnitude of the penalty for late submission and the availability of extensions / waivers depends on the assessment category and CATS weighting - see below and the Assessment Handbook for more information.

Waivers are **only permitted** where indicated by the assessment category in the Assessment Handbook and under the conditions that

1. the component of assessed work is worth less than 3 CATS;
2. the waived assessment is worth less than or equal to 20% of the module mark;
3. a maximum of 6 CATS per year of study is waived.

For waived assessments, the module mark is calculated from the other components in the module, according to their weightings divided by the total amount of components completed.

All requests for consideration of special circumstances must be submitted online via Tabula. Further information can be found in the Sections on mitigating circumstances and reasonable adjustment.

Coursework is not eligible for mitigating circumstances for the loss of work in progress. You are responsible for storing your work in progress in an accessible and robust manner. You are encouraged to use cloud file storage, either OneDrive or Warwick MyFiles, both of which are supported by IT services who can assist you to recover files.

5.2.3 Submission

5.2.3.1 Online Coursework Submission

- Coursework that is required to be submitted online cannot be accepted by email or hard copy. Students who encounter problems with submitting work online should contact the support office at stats.ug.support@warwick.ac.uk to resolve any issues.

- All coursework must be submitted as a file upload. Sharing of a link to a file held remotely will not be accepted.
- Statistics coursework is considered as late and subject to penalties if it is more than 1 minute late.
- Coursework is not eligible for mitigating circumstances based on file upload issues unless they are proven to be of sustained duration. You should ensure that you attempt upload at least 30 minutes before the deadline.
- If submitted incorrectly online coursework will be treated as a non-submission until it is submitted correctly, whereupon it will be treated as a late submission. Some examples of errors that are classified as incorrect submission include not finalising a submission, uploading the wrong file and sending work by email.
- Group work that is submitted incorrectly by one member of the group will usually have penalties applied to all students in the group. The module leader may deem that one member of the group is at fault and apply penalties to only this person.

5.2.3.2 Hard Copy Coursework Submission

Some coursework is submitted in hard copy. Module leaders will advise students of the submission requirements in these cases.

- Coursework that is required to be submitted as a hard copy to the support office **cannot be accepted by e-mail** to the support office or seminar tutor unless agreed in advance with the support office due to mitigating circumstances.
- Late submission is considered to be anything submitted more than 1 minute after the deadline.
- Late submissions should be handed to one of the Support Office team **in person** to ensure that the correct submission time is logged. If not handed to the Support Office in person the late penalty will up to whenever the assignment is found, which may be considerably after the work was posted.
- If submitted incorrectly hard copy coursework will be treated as a non-submission until they are submitted correctly, whereupon it will be treated as a late submission. The usual penalties for late submission will apply, which will be a zero grade for weekly / fortnightly homeworks. Some examples of errors that are classified as incorrect submission include not writing name / ID number on work, using the wrong post box and sending work by email.
- Group work that is submitted incorrectly by one member of the group will usually have penalties applied to all students in the group. The module leader may deem that one member of the group is at fault and apply penalties to only this person.

5.2.3.3 Submission Errors

It is important that work is submitted to the right location or feedback and marks cannot be accurately generated in time.

- If you submit coursework to the wrong location or do not finalise an online submission it is treated as late until it is submitted in the correct location.

- All requests to consider submission errors must be submitted through the mitigating circumstances portal in Tabula. You must include full details in a claim about where and when you submitted the file originally and when you correctly submitted the file. There must be clear evidence that the work was completed by the deadline.

5.2.4 Assessment Categories

The Assessment Handbook contains information about the category that each piece of coursework falls under.

Category	Penalty for late submission	Submission cut off	Self-certification	Maximum allowed extension	Waivers
A	0 grade	No submission will be accepted more than 3 working days after the deadline	Allowed for waivers only	The following Monday (or 3 working days if shorter)	Allowed based on self-certification or evidenced mitigating circumstances
B	5% per 24 hour period encompassing a working day.	No submission will be accepted more than 5 working days after the original deadline unless there is a pre-approved extension extending past the cut off period.	Allowed for extensions only.	10 working days	Allowed based on mitigating circumstances with evidence only.
C	5% per 24 hour period encompassing a working day	No submission will be accepted more than 15 working days after the original	Usually allowed for extensions.	20 working days	Not permitted.

Category	Penalty for late submission	Submission cut off	Self-certification	Maximum allowed extension	Waivers
		deadline unless there is a pre-approved extension extending past the cut off period.			
D	5% per 24 hour period encompassing a working day.	No submission will be accepted more than 5 working days after the original deadline unless there is a pre-approved extension extending past the cut off period.	Not permitted.	10 working days	Not permitted.
E	0 grade	At the deadline	Allowed for waivers only.	None.	Allowed based on self-certification or evidenced mitigating circumstances.
F	0 grade	At the deadline for assessments completed on screen, 15 minutes after the deadline for file upload.	Not permitted	None.	Allowed based on mitigating circumstances with evidence only.
G	5% per 24 hour period	3 working days	Not permitted	By liaison with	If presentation is worth 3 CATS

Category	Penalty for late submission	Submission cut off	Self-certification	Maximum allowed extension	Waivers
	encompassing a working day			module leader.	or less and it not possible to reschedule presentation then a waiver is permitted based on mitigating circumstances with evidence. Presentations worth more than 3 CATS will be rescheduled.

Note:

1. Submissions errors and technical errors are considered on a case by case basis through mitigating circumstances. There must be clear evidence that the circumstances could not be foreseen and were completely outside the control of the student. You are strongly advised to ensure you plan your work to allow sufficient time to submit work before the deadline. For example, failure to plan appropriately are not grounds for mitigating circumstances.

2. It is your responsibility to submit your file in the required format by the deadline and in a form that is readable.

5.3 Academic Integrity

The University of Warwick Regulations provides the university's definitions and procedures about Academic Misconduct and should be read in conjunction with the University Guidance on Academic Integrity.

5.3.1 Definitions of Academic Misconduct

Academic misconduct are acts or omissions by a student which give or have the potential to give an unfair advantage in an examination or assessment, or might assist someone else to gain an unfair advantage, or an activity likely to undermine the integrity essential to scholarship and research. An advantage is unfair if it is, or intended to be, obtained by an act specifically disallowed in this Regulation, or if it goes against the principles of academic integrity underpinning this Regulation.

5.3.2 Forms of academic misconduct

Forms of academic misconduct include, but are not limited to, the following:

(i) Plagiarism. Presenting someone else's work or ideas as the student's own;

(ii) Self-plagiarism. Submitting the same work that the student has already submitted for another assessment, unless this is permitted;

(iii) Taking a copy of another student's work without their permission;

(iv) Collusion. Working with one or more others on an assessment which is intended to be the student's own work;

(v) Contract cheating. Where someone completes work for a student, whether for remuneration or not, which is then submitted as the student's own (including use of essay mills or buying work online);

(vi) Arranging for someone else to impersonate a student by undertaking their assessment or examination, in person or otherwise;

(vii) Accessing, or attempting to access, unseen assessment materials in advance of an in-person or online examination, or to obtain or share unseen materials in advance of an in-person or online examination, or to facilitate such activities;

(viii) Submitting fraudulent mitigating circumstances claims or falsifying evidence in support of mitigating circumstances claims (this may also be considered a non-academic disciplinary matter);

(ix) Fabrication or falsification of research, including falsifying data, evidence or experimental results.

Communication During Online Examinations Communication of any type with another candidate during an online examination is considered a breach of academic integrity.

If you experience issues during an online examination you must not consult with any other candidates under any circumstances.

Access to an examination paper by any method other than the approved system or under the direction of an invigilator is considered a breach of academic integrity. Communicating with another student, sending or receiving an examination paper with another candidate will result in an academic conduct investigation, with a likely penalty of a zero grade for the examination.

Plagiarism:

Plagiarism is the reproduction, and presentation as one's own, of the words or ideas of another.

Examples of these kinds of plagiarism include:

- verbatim copying of another individual/institution's work without acknowledgement;

- close paraphrasing of another's work by simply changing a few words or altering the order of presentation, without acknowledgement;
- unacknowledged quotation of phrases from another's work;
- the deliberate and detailed presentation of another's concept as one's own.

Plagiarism can also include self-plagiarism – that is repeating one's own, earlier work, without acknowledgement.

Collusion:

Collusion is the collaboration by a student with another person in producing a piece of work submitted for assessment, where that piece of work is presented as being solely the work of the student.

This can take the form of conscious collaboration, without official approval, between two or more students in the preparation and production of work which is ultimately submitted by each in an identical, or substantially similar form and/or is represented by each to be the product of his or her individual efforts.

In addition, collusion can take place inadvertently, even if there was no intent to gain an advantage by collaborating. Collusion occurs whenever work is inaccurately presented as the sole work of the student submitting it. For example, if two students share ideas to the extent that the details of any mistakes they might have made will be identical in both pieces of work, then it is very likely that they have colluded, regardless of intent. Discussion with another student while writing a piece of assessed work is not strictly prohibited, but is especially vulnerable to inadvertent collusion. No student should know the answer that another student has submitted or intends to submit, when writing or typing their own answer.

Collusion also occurs where there is unauthorized co-operation between a student and another person in the preparation and production of work which is presented as the student's own work. If you permit another student to cheat, for example by giving them a copy of your work, you are also in contravention of regulations, whether you intended for them to copy your work or not.

Contract Cheating:

Where a student is found to have submitted work for assessment that is procured through a third party, with or without a payment being made, this would be considered "Contract Cheating" and would therefore fall under the remit of plagiarism as defined above.

Where work has been passed to a third party for proof reading and this has resulted in changes to the work which go beyond that which is deemed appropriate in the University's' Proof Reading Guidance, this would be considered a form of cheating, whether or not the work was paid for.

The University acknowledges that students may wish to seek assistance from third parties, whether they be friends, family or professional proofreaders, to review their work prior to

submission. The University's policy on proofreading sets out what the University considers to be acceptable practice in this area.

5.3.3 Advice on Collaboration

The department recognises that discussing ideas about how to tackle questions is a valuable part of the learning process.

Unless stated otherwise on the assessment, collaboration in the sense of a discussion of general strategies or help of a general nature is allowed. However, detailed discussions and comparison of numerical results or computer code **are not permitted** unless the module leader provides specific advice in this respect. The work you submit should be written in your own words and you should not view, see or be aware of the content of written work, computer code or computer output belonging to another student. If you use an external source such as an online discussion forum then you must cite it. In addition to being good academic practice, this will reduce the chance that your work is flagged as having potentially been plagiarised from other students who found the same source.

5.3.4 Training and Resources

All students are advised to complete the university's training courses on Academic Integrity.

5.3.5 Software Repositories

It is becoming increasingly common for students to use repositories (such as GitHub and GitLab to store and manage their coursework or related software. If you do this, you must make sure that your repositories are marked as "private" (and remain so, even after you have left the University), since by default they may be public and may be seen by other students. If you make your coursework public, and it is viewed or copied by other students, you may be investigated for abetting plagiarism (just as if you had deliberately handed your work to another student to copy).

If you need to make a "portfolio" visible to potential employers, then the above still holds - either give the employer individual access (if the repository allows it), or make sure no coursework materials are included.

5.3.6 Use of Source Matching Software

Where the format and style of the assessment allows, the Department of Statistics uses source matching software packages as part of the submission process for assessed work. The report from source matching software packages is included as part of the consideration of assessed work, and in all further investigation of cases of suspected plagiarism, alongside the application of sound academic judgement.

Students are advised against using source matching software packages at other institutions or source matching software available online. Source matching software often automatically adds all new material to its database so this practice may lead to students' work being investigated for plagiarism.

5.3.7 Sanctions available to the Department Academic Conduct Panels

(i) A reduction in mark for the assessed work to reflect the impact of the academic misconduct. The mark may be reduced down to zero;

(ii) Require re-submission of the original work with revised referencing, for a capped mark;

(iii) Require re-submission of a new piece of work for a reduced or capped mark.

Students should be advised that the Department of Statistics usually applies a zero grade for the entire piece of assessed work for coursework with low CATS weighting.

5.3.8 Sanctions available to the Institution level Academic Integrity Committees

Institution level Academic Integrity Committees can impose the same sanctions as Academic Conduct Panels, and, irrespective of whether reference to it was made by the department or by the student, in appropriate cases also the following sanctions:

(i) Determine that the student's previous work, for which credits had already been accumulated, is to be investigated for academic misconduct by the student's home department;

(ii) Recommend to the Academic Registrar that the student be withdrawn from the University, either for a temporary period or permanently under Regulation 36;

(iii) Determine that a student shall have no right to resubmit, or remedy failure with respect to, the piece or pieces of work in respect of which the case was referred to the Academic Integrity Committee.

These sanctions are available to Academic Integrity Committees only where the student has shown severe, or systematic and repeat disrespect for principles of academic integrity that are not isolated to one piece of work, or where the extent or nature of misconduct is such as to warrant a sanction exceeding those listed under sanctions available to Academic Conduct Panels.

5.3.9 Relationship to Right to Remedy Failure Policy

(1) Where an item of assessment is failed due to a reduction of the mark the student has the right to remedy failure if such a right exists under the University's Right to Remedy Failure Policy. This will be determined by the Examination Board.

(2) Where failure occurs in an item of assessment that was re-submitted there shall be no further right to remedy failure under the University's Right to Remedy Failure Policy.

5.3.10 Support for Students under Investigation

Being under investigation for cheating can be stressful for the students concerned. If you are informed that you are being investigated for suspected cheating you may find the following helpful;

- We are committed to high standards of professionalism and academic conduct and sometimes we may investigate a case where it is found that cheating did not occur. The focus of an academic conduct panel will be understanding how a situation which caused concerns arose.
- You are entitled to bring another person to any meetings relating to investigation of suspected cheating. You may wish to invite a friend, family member, personal tutor, year tutor or advisor from the SU.
- If you are found guilty of cheating in one piece of assessed work with a low CATS value it is not likely to have a significant effect on your module or year mark. The severity of the consequences increases for any subsequent offences which is deemed to be sufficient deterrent to repeat offences.

5.4 Reasonable Adjustment

Special examination arrangements, as well assessed work arrangements, may be provided as a reasonable adjustment for students with a long term condition and sometimes a any temporary impairment that is known far enough in advance.

A long term condition includes any long-term disability, diagnosed learning difference, illness, mental health condition or any other medical condition that could affect your ability to take examinations. Examples of a temporary impairment include illness or broken bones.

If you have an illness or condition that you think may require special examination arrangements please discuss this with your personal tutor and the Disability Team, part of Wellbeing and Student Support.

Students with a long term condition should register with Disability Services and meet with a Disability Adviser so that they can discuss what reasonable adjustments may be helpful to enable a student to engage with their course. Adjustments are considered on an individual basis and considered in the context of the impact of a disability or learning difference, University policies and the Equality Act (2010).

Recommendations are evidence-based; students are required to supply appropriate and recent medical evidence, or, in the case of a learning difference such as dyslexia or dyspraxia, a post 16 diagnostic assessment completed by an Educational Psychologist or assessor with a suitable practicing certificate.

Once a student has met with the Disability Team, the adviser will contact the student's department (with their permission) to recommend any specific adjustments. Although adjustments vary, it is not unusual for recommendations to be made relating to examination conditions, coursework deadlines or access to lecture materials.

Cases of temporary illness or injury will be granted a temporary arrangement at the time, or will be taken into account by the examination board after your examination has taken place; these will not carry over to the following year. If you have a temporary and/or unexpected illness, injury or condition that may result in you needing additional support for your study or examinations (for example a broken limb requiring a scribe for

examinations or lectures) you should submit medical evidence of your condition to the Student Support Office, who will liaise with the Examinations Office with regard to agreeing any additional temporary support requirements or reasonable adjustments ahead of your examination taking place.

5.4.1 Support Recommendations

The Disability Team may provide support recommendations with advice or information about adjustments suitable for module leaders or seminar / tutorial leaders.

The Support Office will make arrangements for your module leaders and seminar / tutorial leaders to have access to the recommendations.

However, for this information to be made available to the correct people, you should contact the Support Office to ask for the information to be shared whenever;

- You complete, or amend, your module registrations.
- You join or change a new tutorial or seminar group.

It would be helpful to the Support Office if you can provide information in your communication about the modules you have chosen and details about groups that you have joined (module code, group name and teaching staff).

5.4.2 Special Examination Arrangements

There are deadlines by which the examinations office must receive recommendations from the Disability Team which are listed on the Alternative Exam Arrangements webpage.

Please note that the university will **not** normally grant special examination arrangements for any requests which are made after the appropriate deadline which relate to circumstances which are not unexpected and could reasonably have been anticipated.

Once accepted, these arrangements will continue for the duration of your degree course.

Students who have a late diagnosis of a learning difficulty are advised to submit a mitigating circumstances claim for affected examinations for which reasonable adjustment was not provided.

5.4.3 Class Tests

Regarding class tests and other assessed work, special arrangements need to be discussed and agreed with the relevant department for each module for which you require special arrangements. In addition to the contacts above, please notify the Student Support Office (both at the Department of Statistics and the Department which offers the corresponding module).

It is not required for you to notify module leaders if you do not feel comfortable doing so, but we recommend notifying them, as it will give more time for them to consider how best to accommodate your specific requirements.

Please let the Student Support Office know about special arrangements at least 10 working days before the class test takes place or the assessment is due. If possible let us know earlier to allow us to best support you. Insufficient notice to the corresponding departments may mean that it is not possible to make appropriate arrangements in time for the class test or assessment.

5.4.4 Coursework Deadlines

The Disability Team may recommend that the department shows some flexibility on assignment deadlines but they do not recommend automatic extensions.

Extensions for non-medical reasons tend to have an impact and a knock on effect on subsequent deadlines and therefore are not usually routinely recommended.

Students **must** still request an extension through the normal extension request process, each time they wish to be considered for an extension. Extensions are never granted by default and each request will be considered individually. If you wish to discuss, in advance, the likelihood of an extension being approved please contact the Year Tutor and / or Disability Coordinator.

5.4.5 Religious Observance

If for reasons of religious observance you are unable to take examinations on particular day(s), you must notify your academic department and the Academic Office (Examinations) of your preferences, by completing the Religious Observance form.

While the University will make every reasonable effort to avoid the times/dates in your request, owing to the logistical constraints and difficulties involved in scheduling examinations, it may prove impossible to avoid those times/dates for your examinations. In such an event you may wish to ask your academic department to see if they can make any alternative arrangements for you, or ask the relevant University Chaplain if they could help in terms of chaperoning arrangements. Therefore please note that submission of the religious observance request form does **not** mean that your examinations will definitely not be set on the dates/times you would wish to avoid.

Fully completed forms should be submitted in accordance to the instructions provided on the the Religious Observance form.

Please note that late submissions will **not** be accepted. It is vital that you check the deadline if you intend to submit a religious observance form.

5.5 Mitigating Circumstances

During the course of study you may experience exceptional unforeseen short term circumstances which are outside your control and might have a detrimental effect on your studies.

The University maintains a policy on mitigating circumstances.

5.5.1 Mitigating Circumstances

For mitigating circumstances to be considered you **must**:

- Submit the information in a claim in the **Tabula mitigating circumstances portal.**
  - Information disclosed to personal tutors or other staff will **not** be considered.
- Claim **all affected assessments and examinations** and the dates.
  - It is not possible to consider any assessments or examinations that have not been claimed in the mitigating circumstances portal.
- Submit the claim by the **deadlines** shown below.
  - If you do not submit by the deadlines shown below then your claim will be rejected unless the mitigating circumstances panel considers that there are strong grounds for the late submission (e.g. hospitalisation, late diagnosis).
- Respond to requests for additional information within 5 working days.

Deadlines for claims relating to coursework:

- You must claim **no more than 20 working days after the deadline of the assignment**.
- You should not claim more than two weeks before the deadline. Claims submitted too far in advance will be rejected.
- Also see the Statistics Assessment Handbook and course handbook sections on self-certification and coursework for more information about possible extensions and waivers.

Deadlines for claims relating to submission or technical issues in online class tests or examinations:

- You must claim **within 3 hours of the online class test or online examination.**

All mitigating circumstances claims and supporting evidence must be received **in full** by the following dates or will not be considered until the following examination board:

- Year 1: **Friday of Week 8 of Term 3**
- Year 2: **Monday of Week 10 of Term 3**
- Year 3/4/MSc taught component: **Monday of Week 8 of Term 3**
- MSc Dissertation: **2 weeks after submission deadline**
- All years September examinations: **3 working days after the student's last examination**

If there is strong reason for late submission of a claim (such as hospitalisation or late diagnosis) then a mitigating circumstances panel can decide to accept a late mitigating

circumstances claim. However, some options may not be available for an accepted late claim such as entry for a reassessment examination or an extension for coursework.

Claims that are submitted after the deadline without an explanation or where the reason is not deemed sufficient will be **rejected**.

5.5.2 Definition

Mitigating circumstances are defined as:

- Situations that you could not have predicted and had no control over (e.g. serious illness, death of someone close, being the victim of a crime, family difficulties and unforeseen financial hardship);
- Situations with significant impact on your ability to undertake assessments/examinations which are independently evidenced in a timely fashion; (e.g. doctor's note during illness showing duration and level of negative impact);
- Situations that are acute or short term, the timing of which are relevant to the impact on your study (normally within three weeks of the relevant assessment event or deadline).

In general terms, mitigating circumstances must be

- significant (they have more than a minor impact on you),
- unexpected (you must have had no prior knowledge of the event),
- unpreventable (there was no reasonable steps you could have taken to prevent the event),
- relevant (you must be able to link the event, and its impact on the period for which your claim is being made)
- corroborated (it must be independently verifiable and the evidence must meet the University requirements)

NOTE: Long term chronic conditions (normally greater than a term in duration and that are likely to be ongoing) and disabilities are dealt with under the reasonable adjustments (RA's) policy.

Some students have a late identification of a disability and so reasonable adjustments to assessments may not be in place. This scenario is dealt with through the University's mitigating circumstances procedure.

5.5.3 Support for Mitigating Circumstances

The Department's Student Support and Progression Officer can provide support for mitigating circumstances.

The University offers support through a number of mechanisms for individual mitigating circumstances. If you are in any doubt about whether your situation is eligible as a mitigating circumstance you should consult either your Personal Tutor or the Year Tutor. Additionally, you may wish to consult staff outside your department for extra support and

guidance, e.g. Wellbeing Support Services or one of the advisors at the Students' Union Advice Centre.

Even if your circumstance is not eligible for consideration it may nevertheless be something for which you should seek support.

Note. A successful mitigating circumstance case does not excuse you from an assessment as the learning outcomes for the module(s) affected must still be undertaken. It may lead to an extension for assessed work or a resit opportunity (as a first attempt or for a capped mark) for any test, oral or written examination (to be taken at the earliest scheduled opportunity).

5.5.4 Confidentiality

Any information provided by you is sensitive and will be treated confidentially and in line with General Data Protection Regulation (GDPR).

Any student who believes that the mitigating circumstances submission contains highly confidential evidence, may show their evidence in person or in a video-call to the Year Tutor. Subsequent communication by staff in possession of such confidential information to other bodies (such as to Board of Examiners boards and/or module leaders) is limited to listing the categorisation of mitigation (e.g. extension, waiver, etc) and reporting the appropriate grading (mild, moderate, or severe) of the MC submission and **not** the details of the actual circumstances or specific evidence. Note that showing evidence in person serves the sole purpose of confirming facts described in the mitigating circumstances claim, and the merits of the claim will not be discussed in this meeting.

5.5.5 Reporting of Mitigating Circumstances Information

While it is acknowledged that you may be reluctant or not comfortable disclosing relevant information pertaining to private or sensitive issues or mental or physical health difficulties which are impacting on your academic progression, this cannot be used as an excuse not to do so. We cannot take into account circumstances that we are not told about. To ensure fairness to all students, it is your responsibility to fully disclose all relevant mitigating circumstances within the time frames laid down. Once marks have been officially released to you, it is too late to submit mitigating circumstances and retrospective applications. Consequently, mitigation where a student did not wish to raise their issues until they received their results, will not normally be considered or accepted. All applications for mitigating circumstances are treated confidentially, and only a small number of staff will sit on the panel which decides the outcome.

Mitigating circumstances not submitted by the relevant deadline cannot be considered by the appropriate Board of Examiners and may only be considered by an Academic Appeals Committee as part of an academic appeal, please see Regulation 42.

An Academic Appeals Committee will only consider mitigating circumstances reported outside the deadlines if there is an exceptional reason why the submission was not presented at the correct time. The reason must be evidenced by independent supporting documentation highlighting why it wasn't presented before the deadline. Academic Appeals Committees often take place after the start of the next academic year which means if

successful, a student may have to take a year out before re-joining their course or taking resit exams or assessments.

5.5.6 Eligibility

In principle, if your circumstance requires treatment or support by a professional or a University Support Service, it is likely to qualify as a mitigating circumstance. If you have not accessed support then it might not be serious enough to warrant mitigation. For example, if an illness does not require medical treatment (e.g. medication prescribed by a GP, GP visit or a referral to specialist physical or mental health services) or is minor (e.g. cough or cold) then it will not normally be eligible.

Self-certification is available for minor illness or other short term circumstances for which independently verified evidence is not available. See the section of this handbook on self-certification for more information.

Similarly, typical short term assessment/examination stress and anxiety is expected and normal and might not meet the mitigating circumstance criteria. Students who have been diagnosed with long term mental or physical health conditions (e.g. anxiety, panic attacks) may be eligible for reasonable adjustments for study which are recommended by Wellbeing and Student Support.

Students would need to provide additional evidence of worsening or new symptoms or any other circumstances that would have impacted on their academic performance during the assessment period to meet the mitigating circumstances criteria.

Note. Evidence of serious physical or mental illness must demonstrate that **advice or treatment was sought at the time**, or soon after any illness. Disclosure weeks or months later would not normally be eligible or will carry very little weight.

5.5.7 Mitigating Circumstances Outcomes

The possible outcomes of an accepted claim for mitigating circumstances are as follows;

- Grant extension for submission of assessed work.
- Waive or reduce penalties for late submission of assessed work
- Recalculation of module mark to disregard an assessment component worth 3 CATS or less (also subject to additional restrictions).
- Allow further first attempt or further resit attempts in failed modules
- Permit to proceed to next year of study
- Recommend that Academic Registrar permit a repeat of the year in full as first attempt or resit.
- Award degree, or higher class of degree, than merited by marks returned

Where an assessment component is waived, the method for calculating the module mark is as follows:

- When one or more assessment components in a module are waived, the overall module mark will be calculated as a weighted average of the remaining components.

- Where one or more sub-components of a reportable component are waived, the component mark will be calculated as a weighted average of the remaining sub-components.

It is not permitted to amend module marks, other than removal of penalties or reweighting of assessment components, and there is no **formal** classification or year mark for students in their first year or intermediate years.

Consequently, although you may receive a year mark or classification for your first year / intermediate year performance, this is usually based solely on the calculation of the weighted mean of returned module marks (except under exceptional circumstances). If you are permitted to proceed (at any stage) mitigating circumstances that have not been already accounted for under a different outcome will be considered by your final year examining board with respect to the award of the degree and the classification.

The year mark provided by the Department does not appear on transcripts and is not used for any official purposes. If you have accepted mitigating circumstances we know that your year average may not be reflective of the performance that you are capable of. You are allowed to use a plausibly higher predicted degree classification in job applications. However you should discuss with your reference writers what they feel would be a realistic classification to use, to ensure that you use a prediction that they would be prepared to support, and so that they are aware that such support may be required.

Please note that it may not be advantageous to predict a higher classification as you could be made a conditional offer which you are not able to achieve. It would be better to ensure that you have a realistic chance of meeting the requirement for any offers that you receive.

5.5.8 Deferral of Examinations

Where there are circumstances that severely impact a student's ability to sit or prepare for a complete examination period and that are, if possible, independently evidenced, the Departmental Senior Tutor may request on the student's behalf a deferral of the examination period. Deferrals may only be requested with a student's permission.

The student's examination period will be deferred to the next available opportunity, which is normally the September reassessment period for that year (or block) of study.

It is only possible to defer all examinations in a block (e.g. January, April, or Summer). It is not permitted to defer after one or more examinations have been sat - these situations would be considered under mitigating circumstances. Examination deferral requests will be rejected if not submitted in advance: two weeks before the January examination period starts, or one week before the April and Summer examination periods start.

If you believe that deferral of examinations should be considered for your situation, you should contact your Year Tutor **as soon as possible**.

5.5.9 Further Information

Full information about mitigating circumstances can be found at the University of Warwick Mitigating Circumstances Advice for Students.

This includes details and examples of:

- claims that fall within the definition of mitigating circumstances,
- claims that do not fall within the definition of mitigating circumstances,
- acceptable evidence,
- possible outcomes.

Advice about mitigating circumstances claims can be obtained from your Year Tutor.

5.6 Self Certification

Self-certifications are designed to enable students to obtain minor mitigating circumstances outcomes without being required to obtain evidence for conditions such as minor illness, family emergency, caring responsibility.

The university has a policy for self-certification for extensions which can be found under section 4 of the mitigating circumstances policy

In addition the Statistics Department and some other Departments, notably Mathematics, also allow you to self-certify to obtain a waiver for eligible assessments with a low credit weighting.

5.6.1 Availability

All undergraduate and postgraduate taught students are able to use two self-certifications per academic year. Some students with reasonable adjustments via Wellbeing and Student Support may be granted more self-certifications.

You will not be required to state your reasons for using a self-certification. However, the self-certifications are designed to allow you to gain an extension or waiver when you are ill or have an unforeseen situation so you should try to only use them when needed.

All assessments carry a specification as to whether they are eligible for self-certification. For Statistics modules the eligibility of assessments for self-certification for an extension or waiver is listed in the assessment handbook.

- For you to receive an extension or waiver for an eligible assessment you must submit a self-certification form electronically before the end of the working day where the deadline falls. If you submit the self-certification the day after the deadline or later the assessment will not be eligible.
- Each self-certification covers any number of assessments within a 5 working day period.
- You cannot self-certify more than once for the same assessment.

- You cannot self-certify after being granted an extension via mitigating circumstances.
- The self-certification form is available in Tabula under your profile, personal circumstances. Usually, but not always, eligible assessments will be available for you to select from a drop down menu.

For assessments that are delivered via Tabula the deadline will automatically be extended for you.

For assessments that are delivered via Moodle or other assessment systems (such as myWBS), the deadline will need to be manually processed by the Support Office. Please check the eligibility of assessments carefully before self-certifying and allow 3 working days from when you submit the form before contacting the Support Office.

If you have, or can obtain, evidence from a medical professional or other independent verification then we would advise that you submit a mitigating circumstances claim rather than a self-certification. If you have not received an outcome for your mitigating circumstances claim by the deadline of a piece of assessed work, you can self-certify whilst awaiting the outcome of the claim. The self-certification will be cancelled for you if it is not needed.

5.7 Remedying Failure: Resits and Further First Attempts

5.7.1 Pass Mark

Students entering in or before the 19/20 academic year The pass mark for all modules is 40%.

Students entering in or after the 20/21 academic year The pass mark for level 1, 2 and 3 modules is 40%. The pass mark for level 4+ modules (including XX9XX modules) is 50%. The pass mark for these modules is 50% irrespective of the year in which the module is sat.

The highest mark from the original attempt or re-assessment attempt is used for the calculation of year marks and in determining progression and classification.

5.7.2 Failed Modules

Students entering in or before the 20/21 academic year

If you have failed one or more modules you will be not be required (or able) to take another attempt unless;

- You have not met progression requirements
- You have accepted mitigating circumstances and the examining board deems that it is in your best interests to be offered another attempt.

It is not permitted to take further attempts if you have met progression requirements and do not have mitigating circumstances or if you have already proceeded to the next year of

study (e.g. you cannot take a second year module as an additional attempt alongside your third year modules).

The examining board for your year will decide the examinations (and sometimes assessed work) that you are able to take. The examining board will consider how your performance in further attempts will affect your ability to meet progression requirement and they may not offer all failed modules as further attempts.

Students entering in or after the 21/22 academic year

All students commencing study on a taught undergraduate or postgraduate programme have the right to remedy failure on one occasion in each module at the earliest opportunity.

Students have the right to remedy failure in modules where the overall fail minimum pass mark has not been reached/achieved.

Where a module has been passed overall, students are not permitted to remedy failure in individual assessment components, unless the requirement to pass these components has been specified in the module approval form (which is usually displayed in the module catalogue).

The recommendation to offer the opportunity to resit can only be made by Board of Examiners, who will determine if the reassessment is either a required or optional resit, and if it is being taken as a second attempt or further first attempt.

For undergraduate students, the earliest opportunity to remedy failure is in the established September reassessment period, following the ratification of marks by the summer meeting of the Board of Examiners.

5.7.3 Further Attempts

A further attempt at a module may be classified as a resit, where the mark is capped at the pass mark, or a further first attempt where the mark is not capped.

Resit marks for ST-modules are usually calculated based on the examination ONLY with coursework marks not taken into account when calculating the module mark. This usually works in your favour as students who have failed the examination tend to have failed the coursework and calculating a resit mark from 100% examination enables you to focus on passing the examination without being burdened with coursework in addition.

Some modules, usually those with a high coursework weighting, will be reassessed by a combination of coursework and examination. Each module has an entry in the module catalogue which states the reassessment method.

Further first attempt marks for ST-modules are usually calculated based on the examination and the original coursework submission. If the original coursework was affected by accepted mitigating circumstances the Board of Examiners may choose to offer a further attempt at the coursework component or calculate the module mark based on the examination only.

Students entering in or before the 20/21 academic year

A student who does not meet progression requirements after a further first attempt is usually offered one more attempt as a resit.

Only one resit attempt is offered for each module and students who have not met progression requirements after resits are required to withdraw. Students who have passed their first year are likely to be eligible for an exit qualification.

5.7.4 Final Year

Final year students with mitigating circumstances, or who have failed to meet degree requirements, may be offered reassessments in the September examination period.

Graduation will be delayed until after the September examination board.

5.7.5 Attendance at September Examinations

University requirements are that all students must return to Warwick University to sit their examinations.

Please note that it is your own responsibility to book any overnight accommodation you may require during the September examination period. The University offers overnight accommodation, which can be booked by visiting the accommodation website. Accommodation will be offered on a first-come first-served basis as there is a limited number of rooms available.

5.8 Examining Boards and External Examiners

5.8.1 Examining Boards

Board of Examiners are appointed annually by Senate and are constituted in line with Regulation 9.

First Year Board of Examiners

The Board of Examiners for first years is a Departmental Board that considers only students with their home department in Statistics. The board takes recommendations from a mitigating circumstances sub-board, considers the grade profile and determines which students have met the progression requirements.

The Statistics Exam Board for first year students takes place in the week after the end of the summer term. Within two weeks of the first-year exam board, the results will be made available on Tabula. The Department will write (**by email to the university email address**) to those students who are not permitted to proceed to the second year of their degree and, and, in cases where students are required to take further examinations, to set out the arrangements for these.

Second Year Board of Examiners

The Board of Examiners for second years is a Departmental Board that only considers students with their home department in Statistics. The board takes recommendations from a mitigating circumstances sub-board, considers the grade profile and determines which students have met the progression requirements.

The Statistics Exam Board for second year students takes place in the two weeks after the end of the summer term. Within two weeks of the second-year exam board, the results will be made available on Tabula. The Department will write (**by email to the university email address**) to those students who are not permitted to proceed to the third year of their degree, or are required to transfer to the BSc from the integrated master's.

Final Year Board of Examiners

The final year board of examiners is a Departmental Board that only considers students with their home department in Statistics. It comprises staff from the Department of Statistics, external examiners and representatives from other University of Warwick departments that contribute significantly to the courses delivered by Statistics.

The final year board of examiners considers third year BSc students, third year integrated Masters students and fourth year integrated Masters students. The final year board of examiners considers and decides the classification for final year students and the progression of third year integrated Masters students into the fourth year.

5.8.2 External Examiners

External Examiners are appointed to provide the University with assurance that:

- the academic standards of its awards are appropriate,
- standards at Warwick are comparable with those of other higher education institutions,
- assessment processes are fair and appropriate

and also to offer carefully considered advice on good practice and opportunities for enhancement.

External examiners are provided with all draft first sit and reassessment examination papers and other major elements of summative assessment that contribute to the final award for comment and approval, together with model answers (where appropriate). They are asked to scrutinise examination papers for accuracy and to confirm that intended learning outcomes are being appropriately assessed. The external examiners provide suggestions for amendments to examination papers before they are finalised.

External examiners have access to scripts and assessment material contributing to the final classifications and make a report to the Board of Examiners on the standards of marking. They do not amend individual marks but may make recommendations to audit / validate the marking and moderation process.

During the process of classification, the External Examiner ensure that special consideration is given to candidates whose performance places them at the top and bottom

of the group as a whole, or whose performance falls on the borderline between two classifications or is a fail.

External Examiners are full members of the Board of Examiners. They have the right to be present at all examiners' meetings at all stages contributing to degree classification and to participate in discussions of the Board. They are required to be present at Examinations Boards at which University awards are recommended.

External Examiners do not make judgements in relation to mitigating circumstances or academic integrity except to ensure that the University's relevant procedures have been followed.

No award of the University can be made without the participation in the assessment process of at least one External Examiner.

5.9 Year Marks and Classification

5.9.1 Calculation of Year Mark

Students who have taken the normal loading, or an overload less than the value of the smallest module, will be given a year mark calculated by the weighted mean of the module marks.

Students who have taken an overload will be given a year mark calculated by determining the highest mark from all modules, or a subset of modules, that satisfies course regulations.

Module marks are stored to the nearest whole integer.

Year marks are stored to one decimal place.

5.9.2 Example Year Mark Calculation for Overloading

For example, a second-year student on the MORSE course has to take six core modules (ST202, ST208, ST218, ST219, EC220 and IB207), all of which have 12 CATS. In addition they must take at least 36 CATS from List A.

Suppose that in addition to taking the six core modules, a second-year MORSE student also takes IB320, ST221 and MA258 from List A and CS260, IB132 and MA117 from List B - a total of 147 CATS.

Module Code	EC220	IB207	ST202	ST208	ST218	ST219	CS260	IB132	IB320	MA117	MA258	ST221
List	Core	Core	Core	Core	Core	Core	List B	List B	List A	List B	List A	List A
CATS	12	12	12	12	12	12	15	12	12	12	12	12
Module	70	88	67	80	61	74	69	77	81	93	63	59

Mark

The weighted mean including all module marks is 73.4%.

The student has an overload of 27 CATS so the year mark calculation is permitted to drop one 15 CATS module and one 12 CATS module or two 12 CATS modules.

The student has chosen 36 CATS modules from List A which is exactly the amount required for course regulations so all module marks from core and List A modules must be used to calculate the year mark. This means that, although their lowest mark is in ST221, this mark cannot be removed from the calculation.

The only module marks that can be removed from the calculation of the year mark are those from List B.

One of the List B module choices, CS260 has a module mark clearly below the weighted mean and therefore excluding this from the calculation will give a higher year mark. The weighted mean of the remaining modules is 73.9%.

The other List B module choices, MA117 and IB132, have a higher module mark than the new weighted mean therefore excluding these module marks would result in a lower year mark. Consequently these marks are retained in the year mark calculation and the student would be awarded a year mark of 73.9%.

5.9.3 Classification

For BSc programmes the first year counts 10%, the second year 30% and the third year 60% towards the final degree mark; i.e. if S1, S2, S3 denote the % credits obtained at the end of years 1, 2 and 3 respectively, then the overall degree % mark is

$C = (10S_1 + 30S_2 + 60S_3)/100.$

For Integrated Masters programmes the first year counts 10%, the second year 20%, the third year 30% and the fourth year 40% towards the final Integrated Master's degree mark; i.e. if S1, S2, S3, S4 denote the % credits obtained at the end of years 1, 2 , 3 and 4 respectively, then the overall degree % mark is

$C = (10S_1 + 20S_2 + 30S_3 + 40S_4)/100.$

Covid-19 Arrangements

For students who studied the first year of a Statistics course in 19/20, and whose first year marks were subject to force majeure, the first year counts 0%, the second year 30%, and the third year 70% towards the final BSc degree mark.

For students who studied the first year of a Statistics course in 19/20, and whose first year marks were subject to force majeure, the first year counts 0%, the second year 20%, the third year 35% and the fourth year 45% towards the Integrated Masters degree mark.

For any final year student there are 6 possible outcomes of the final examinations.

First	C ≥ 70.0%	Where the mean is greater than or equal to 70.0% the Honours degree shall be provisionally classified as a First.
Upper Second	69.9% ≥ C ≥ 60.0%	Where the mean is greater than or equal to 60.0% and less than 70.0% the Honours degree shall be provisionally classified as an Upper Second.
Lower Second	59.9% ≥ C ≥ 50.0%	Where the mean is greater than or equal to 50.0% and less than 60.0% the Honours degree shall be provisionally classified as a Lower Second.
Third	49.9% ≥ C ≥ 40.0%	Where the mean is greater than or equal to 40.0% and less than 50.0% the Honours degree shall be provisionally classified as a Third.
Pass degree (not Honours)	39.9% ≥ C ≥ 35.0%	Where the mean is greater than or equal to 35.0% and less than 40.0% the degree shall be provisionally awarded as a Pass degree.
Fail	34.9% ≥ C	Where the mean is less than 35.0% provisionally no degree shall be awarded.

5.9.3.1 Students starting in or before 20/21

To be provisionally classified in the class indicated by the mean:

- for an Integrated Master's degree, a candidate must pass (at the 40% module pass mark) in the final three years contributing to the degree classification, whole modules equating to at least 258 credits in total, including at least 90 credits taken in the final year.
- for an Honours degree (whether of three or four years' duration), a candidate must pass (at the 40% module pass mark) in the final two years contributing to the degree classification, whole modules equating to at least 168 credits in total, including at least 80 credits taken in the final year.
- for a Pass degree (whether of three or four years' duration), a candidate must pass (at the 40% module pass mark) in the final two years contributing to the degree classification, whole modules equating to at least 150 credits in total, including at least 50 credits taken in the final year.
- a candidate must achieve marks in that class or higher in whole modules, equating to at least 48 credits in total, which are named as a core or listed module. The 48 CATS at that class or higher is expected to be seen in the final year of the degree.

5.9.3.2 Students starting in or after 21/22

To be provisionally classified in the class indicated by the mean:

- for an Integrated Master's degree, a candidate must have studied at least 480 CATs and passed at least 360 credits of which at least 90 CATS must be of level 4+ modules (NB. Level 4+ should be interpreted as:- xx4xx, xx5xx, xx9xx).
- for an Honours degree a candidate must have studied at least 360 CATS and passed at least 270 credits of which at least 90 CATS must be of of level 3+ modules (NB: Level 3+ should be interpreted as: xx3xx, xx4xx, xx5xx, xx9xx).
- for a Pass degree a candidate must have studied at least 300 CATS and passed at least 240 credits of which at least 60 CATS must be of level 3+ modules.
- a candidate must achieve marks in that class or higher in whole modules, equating to at least 48 credits in total, which are named as a core or listed module. The 48 CATS at that class or higher is expected to be seen in the final year of the degree.

Covid-19 Arrangements

5.9.4 Graduation Benchmark

If you undertook assessments in term 3 of 2020 then the graduation benchmark will apply when your classification is determined.

The graduation benchmark is a calculation that is undertaken at the end of your degree. We will the calculate your overall final year average mark and degree classification as usual at the end of your final year, taking into account the actual marks from all your summative assessments in all years that count towards your degree classification (including those in Term 3 of your intermediate year (2019/20)).

We will also undertake a calculation where we remove these Term 3 marks from the degree calculation by working out a weighted average of all summative assessments taken in your intermediate year up to 13 March 2020 and using that weighted average in your overall degree calculation.

We will use whichever of the two calculations is higher (the graduation benchmark or the usual calculation of all marks) to determine the final classification of your degree.

Further information can be found at the graduation benchmark website.

5.10 Mark Release and Transcripts

5.10.1 Mid-Year Marks

The marks given for assessed work and examinations taken before the end of the academic year are always provisional and may be changed by the Board of Examiners.

5.10.2 Assignments and Class Tests

- All coursework marks for ST modules will be made available to you in Moodle in the Grades section of the Module pages. The marks as shown in Moodle will be used to calculate the module mark.
- You are responsible for checking that the marks recorded in Moodle are accurate and reporting any issues or errors (such as if you believe a penalty has been incorrectly applied) to the Statistics Support Office within 10 working days of the end of the term in which the assessment took place.

5.10.3 January Examinations

- Module marks will be returned within the academic year. These marks are provisional until considered by the examining board and ratified by the external examiners.
- Marks will be returned as soon as possible therefore it is not possible to specify an exact date. However it will normally be no later than the end of term 2. You will be notified by email when the marks will be released.

5.10.4 April / Summer Examinations

- Year average / classifications will be published online as soon as possible after the relevant examining board.
- You will be notified of the release of the summary information and provided a link by email.
- The University of Warwick uses a unified mark release system in Tabula. The release of results will be set according to the university schedule. Please note that students on the third year of an integrated masters are usually classified as intermediate year students and receive their results at the same time as year 2, which is usually later than year 3 finalists.
- Your personal tutor will have access to your individual module marks when the information is published in Tabula.
- Please see the mark release webpage for information about when your marks will be released.
- Module marks will be returned with the post exam board results. The release will contain;
  - The progression decision if you are expected to continue to another academic year
  - The outcome (classification or reassessment) if you are expected to graduate this academic year
  - Component marks for each module
  - Overall module marks
  - Information about reassessments that you have been entered for

- Information about whether reassessments are required or optional and whether they are capped resit or uncapped further first attempt.

5.10.5 Dissertation Marks

- Dissertation marking is moderated and scrutinised by external examiners.
- Dissertation marks are released with the post exam board results.

5.11 Transcripts

Transcripts are only available for undergraduates via their Higher Education Achievement Report (HEAR).

The HEAR is a record of academic and non-academic achievements which have been verified by the University. The HEAR provides a fuller picture of a student's achievements whilst at university. As well as including information about academic achievement, it also includes more detailed information about the course of study and other activities undertaken, such as volunteering.

The HEAR is delivered by GradIntelligence (GradIntel) and is accessible online at the GradIntel website.

You will receive a registration email from them during your first academic year and you generate your own username on your first log in. Your Warwick e-mail is not your username but it is your default account so you can use it to regenerate a forgotten username and password. If you are a finalist you should consider changing the associated email account as your University of Warwick email account expires 12 months after graduation.

The GradIntel website gives you the option to share your HEAR with employers/institutions of your choosing by sending an electronic token which enables them to view your HEAR. Details about how to do this are available on the GradIntel website.

You may want to view this brief visual guide to accessing and sharing your HEAR. This document contains screenshots. If you require an audio description of the contents please contact the Support Office at stats.ug.support@warwick.ac.uk.

5.12 Prizes and Actuarial Exemptions

5.12.1 Prizes

Prizes will be awarded for outstanding/excellent performances in each year of our degree courses. For continuing students, these will be presented in the induction session at the start of the next academic year.

For graduating students, these will be presented in a reception in the Department on the day of graduation. Third year integrated Masters students going into the fourth year are also eligible for Warwick Statistics Senior Scholarships.

5.12.2 Actuarial Exemptions

The Institute and Faculty of Actuaries (IFoA) is the UK's only chartered professional body dedicated to educating, developing and regulating actuaries based both in the UK and internationally.

Information about the IFoA can be found online, as can the IFoA curriculum, which was developed in 2019.

Exemptions from the professional actuarial examinations are not given automatically. The actuarial profession awards exemptions only if a student has achieved a satisfactory overall performance as well as a satisfactory performance in the relevant University courses.

Actuarial exemptions for individual students are determined each academic year by an external assessor who validates the examination and assessment schema and sets the minimum criteria. Finalist students will be notified of their exemptions by email of a secure link by the end of September following the examining boards.

For each exemption, a list of the modules in which you are required to obtain a satisfactory performance is maintained on the Department of Statistics web page on actuarial exemptions.

5.13 Exit Awards

'Exit' awards have been developed in order to recognise the achievement of **undergraduate students** where it was not possible to award the highest qualification for which they were registered. This includes students as follows:

- who have not met progression requirements
- who withdraw due to personal or medical reasons
- who are restarting on another degree programme

There is an expectation that Boards of Examiners will make a recommendation to allow a student to remedy failure (e.g. resit, resit without residence as appropriate), wherever possible, to allow students an opportunity to progress, and recommend an exit qualification only where these possibilities have been exhausted (or are not available).

Students who have been given a recommendation by the Board of Examiners that allows them to remedy failure may choose to take permanent withdrawal and be considered for an exit qualification instead.

Exit awards are not awarded by Departmental boards of examiners but are awarded by the Institutional University board of examiners for Undergraduate Exit awards. However, cases for consideration are passed from the departmental board and a representative from the department sits on this board.

The following table outlines the total minimum credit to be taken and passed in order to be able to recommend each qualification:

Qualification	Total minimum credit to be taken	Total minimum credit to be passed	Highest level of credit	Minimum credit to be passed at the highest level
CertHE	120	90	FHEQ level 4 (year 1)	90
DipHE	240	180	FHEQ level 5 (year 2)	90

5.14 Appeals

Under certain defined circumstances and as per the University Calendar (University Regulations) students may appeal against decisions relating to their academic progress or outcomes. These may be summarised broadly as follows:

- Final-year undergraduate students may appeal against the award of a particular degree class or if they have not been awarded a qualification. For an appeal to have any chance of success it should be based on relevant evidence which was not available to the Board of Examiners when its decision was reached. Further the reason why the evidence was not available at the time the Board met should be provided.
- First-year and intermediate-year undergraduate students have the right to appeal only against a decision that they be required to withdraw from their course of study, and then only if they are in possession of relevant evidence which was not available to the Board of Examiners when its decision was reached.

All appeals must be lodged in writing within ten University working days of the publication of the examination result which is the subject of the appeal. Supplementary information / evidence may be added to an appeal after this time.

Further information and details of the process can be found in the University Calendar (see Regulation 42) or at the Academic Office webpage.

6 Support, Well-being and Values

6.1 Personal Tutors

Every student has a member of staff assigned as their personal tutor. You will be able to see who your personal tutor is in Tabula by looking at the personal tutor tab in your Tabula profile.

Your tutor is there to help sort out any problems connected with your university career, and you must make a point of seeing them at least once a term (usually during the first five weeks) so that they know how you are getting on.

You must respond promptly if they ask to see you and it is important to keep your personal tutor informed of any academic or personal problems that are affecting your performance.

Students can continue to contact their personal tutor via email during a year abroad or an intercalated year.

If your personal tutor takes sick or study leave you will be assigned a temporary personal tutor while your original tutor is away from the department.

Some specific ways in which your personal tutor can help are:

- Providing general academic advice on progress and development, including discussing possible option choices and disclosing exam marks and their implications.
- Giving you help and advice about pastoral and non-academic matters insofar as they are able and advising you about where to find further help if you need it.
- Writing a letter of reference when you apply for jobs, grants, or postgraduate study.

Personal Tutors should:

- Advertise two 'office hours' each week, starting on the half-hour, when students can consult them.
- Communicate with their students regularly, including via email.

In addition your personal tutor has certain formal duties to represent you in disciplinary matters. More information about what you can expect from your personal tutor is available from the Dean of Students webpage.

6.2 Departmental Support

There are many sources of support in the Department of Statistics and a brief description of the roles in the Department of Statistics are shown below. The handbook section on contact details provides the names of the staff who are currently fulfilling the roles.

The **Department Student Support and Progression Officer (SSPO)** has a dedicated resource to support students experiencing personal difficulties. Aimed to assist students to get back on track, progress and engage with their studies, Minhaz offers non-judgemental advice, information and guidance on a breadth of issues.

The **Departmental Senior Tutor** ensures that the personal tutoring system runs smoothly and efficiently within the Department and provides help and advice to the Personal Tutors. At the same time, the Senior Tutor serves as a link between the Department and the Faculty Senior Tutor.

Year Tutors contribute to student information sessions, develop the community, work with the Senior Tutor to provide contextual information to Personal Tutors and provide year-specific briefing to students regarding examinations and progression. The Year Tutor may also interact directly with students to help in specific matters whose nature require resources and/or support beyond the role of the Personal Tutor (for example, cases of personal issues with the student's Personal Tutor, cases of temporary withdrawals, cases of concerns for lack of attendance, specific cases of mitigating circumstances, and so on).

The department's **Director of Student Experience and Progression** (DSEP) is responsible for working with students to enhance the student experience. The DSEP works closely with the department's SSLC, and will carefully consider any students' views or feedback.

The **Disability Coordinator** liaises with Wellbeing and Student Support and teaching staff to provide interpretation of reasonable adjustment recommendations in the context of statistical education.

The **Equality and Diversity Representative** is the Departmental champion who implements and embeds initiatives in the Department. They are also available to support students and their personal tutors with any issues relating to equality and diversity.

6.3 Central Support

6.3.1 Wellbeing and Student Support

Wellbeing and Student Support offers an access point to all Wellbeing services – following a short consultation, they will refer you to the most appropriate Wellbeing colleagues for support. In addition, Wellbeing and Student Support offers advice and support appointments on a wide range of issues. If there is something troubling you, or hindering you from focusing on your studies you can talk to Wellbeing.

The issues may be:

- practical - for example, difficulties with accommodation
- emotional - family difficulties, homesickness, support through a disciplinary process
- wellbeing-related - concerns about your wellbeing and how you can better manage it, or that of another member of the University community
- safety-related - concerns about security, harassment or crime

Wellbeing Support is located on the ground floor of Senate House. To access services, submit an enquiry through the Wellbeing webpage or telephone 02476575570.

6.3.2 Counselling and Psychology Interventions Team

The Counselling and Psychology Interventions Team makes up part of the network of support for all students at any level of study. The team offers students opportunities to access professional support to help them better develop and fulfil their personal, academic and professional potential. There are a wide variety of services, including individual counselling, group sessions, workshops and email counselling.

Students engage with the Counselling and Psychology Interventions Team to work through issues such as depression, anxiety, or problems with self/identity or interpersonal relationships. Counselling and psychology can help with exploring issues to develop insight and bring about positive change to psychological and emotional distress.

The Counselling and Psychology Interventions Team is located on the ground floor in Senate House. To access these services, submit an enquiry through their webform.

6.3.3 Disability Team

The University offers a wide range of support services to students with disabilities and encourages a positive climate of disclosure. Students with disabilities can seek advice and support through the Disability Team in Wellbeing and Student Support. Academic Departments, the Dean of Students' Office, the Students' Union, the Health Centre and other teams in Wellbeing and Student Support can also offer advice and guidance to students with disabilities. Further information can be found at the University Support Services webpage.

The Disability Team can also provide information and guidance to staff supporting students with disabilities, also in relation to inclusive teaching and learning practices, the accessibility of course resources, assessment and delivery.

6.3.4 University Dean of Students and Faculty Senior Tutors

The University Dean of Students works closely with Faculty Senior Tutors to assist students and to promote and develop the academic support of students, individually and collectively.

The Dean of Students and Faculty Senior Tutors are experienced members of academic staff whom students can turn to in confidence for support regarding difficulties with their studies, which they have been unable to resolve with departmental Personal and departmental Senior Tutors.

The University Dean of Students has overall responsibility for the development of the personal tutor system, but no disciplinary function. Issues typically dealt with by the Dean of Students' Office include: academic course issues unresolved at the departmental level; advice on temporary withdrawal; appeals against academic decisions; academic complaints; ongoing difficulties with a Personal Tutor, Course Tutors or Supervisors; and problems with termination of registration proceedings.

The Dean of Students' Offices are located on the First Floor of the Senate House (open Monday to Thursday, 9am-5pm, Friday 9am-4pm). In the first instance, please contact the appropriate Faculty Senior Tutor. The Dean of Students Office can be contacted on: DofSResourcePA@warwick.ac.uk or telephone the Offices on 024 76522761.

6.3.5 Student Immigration & Compliance

The Student Immigration & Compliance team supports all EU and international students during their studies at Warwick and is able to assist with immigration advice (a free and confidential service advising on issues including visa extensions, dependant visas, working in the UK during or after study, travel visas, etc.); practical support (bringing family to the UK, Police registration, providing letters to prove student status for visa purposes, banking); and the International Student Experience (social events and trips for international students and their families, and the opportunity to take part in Host UK visits).

Immigration Advice for Students

Advice on immigration can only be obtained via authorised staff who are deemed to meet the Immigration Services Commissioner's Code of Standard and Guidance. You should contact the Immigration Team at immigrationservice@warwick.ac.uk or the Students' Union Advice Centre at advice@warwicksu.com in the first instance for immigration advice. It is also worth noting that changes in your enrolment status, for instance, temporary withdrawal, can have implications for your ability to hold a visa to remain in the UK and you may wish to seek advice accordingly. You will find more information from the Immigration Service webpage. The Student Immigration & Compliance team offers a live chat service for advice. For urgent queries they are located on the ground floor of Senate House (open Monday to Friday, 10am-2pm).

6.3.6 University Health Centre

Students resident on campus and in some local areas should register with the University Health Centre. Students must be registered in order to use the Health Centre, although the Centre may be able to assist non-registered people in emergencies.

The Health Centre provides primary health care GP services to registered patients; two medical practices with both male and female doctors; nurse practitioners and Practice Nurses; sexual health clinics; travel clinics and immunisation facilities. Students should visit the Health Centre if they require a consultation with a doctor or nurse, an emergency appointment, emergency contraception, vaccinations or advice on vaccinations, and sickness certification.

Students living off-campus, who are not able to register with the health centre, can locate their nearest GP by visiting the NHS webpage.

The University Health Centre is located on Health Centre Road and can be contacted by telephone on 0247 526 3418.

6.3.7 Students' Union Advice Centre

The Students' Union Advice Centre provides free, independent, nonjudgmental, impartial and confidential advice to Warwick students. It offers the service to all Students' Union members irrespective of race, gender, sexual orientation, age, disability or religious belief. The Advice Centre acts on behalf of and in the interests of their clients independently of the University and other agencies.

Some of the main areas of advice provided by the Advice Centre are:

- Academic advice: appeals, complaints, change of course and problems, temporary or permanent withdrawal, any University Committee proceedings (continuation of registration, cheating or plagiarism, fitness to practice, fitness to attend, fees and other monies owed to the University)
- Housing advice: campus accommodation, university and private housing, landlord and tenant disputes, tenants' rights, repairs and deposits.

- Disciplinary advice: If you are involved in any incident that is investigated under the Disciplinary Regulations, the Advice Centre recommends contacting them to get advice as early on in the process as possible.
- Personal advice: Health, sexuality, harassment.
- Consumer advice: faulty goods, utility bills, mobile phone and computer problems.
- Employment advice: tax and national insurance, non-payment of wages, terms and conditions of employment.

This is not an exhaustive list of what the Advice Centre does, so if you are unsure where to get help or advice contact them and they will either be able to help you or signpost you to someone who can help you.

The Advice Centre is on the second floor of SU HQ (open Monday to Friday, 9am-3pm). It will see students by appointment and can be reached via the Warwick SU Advice centre webpage.

6.3.8 Student Funding

The Student Funding team offers advice and guidance on all aspects of financial support. This includes government grants and loans, and scholarships and bursaries provided directly by the University. The team can provide budgeting advice to help make students' money go further and also administers University hardship funds.

Students should visit Student Funding if they want to know what financial support they may be entitled to; want to know more about the scholarships and bursaries; are having difficulty paying for day-to-day living expenses; or have additional financial needs because they care for a child or have a disability.

The Student Funding team is located on the ground floor of Senate House (open Monday to Thursday, 9am-5pm, Friday 9am-4pm) and can be contacted by telephone on 024 761 50096 or email: studentfunding@warwick.ac.uk.

6.3.9 Community Safety

The Community Safety team (formerly Campus Security) works 24 hours a day, 7 days a week, 365 days a year to support the University community by ensuring there is a safe, secure and friendly environment for students, staff and visitors.

If you have any queries about security on campus, you can email: Community.Safety@warwick.ac.uk. You can also phone the Community Safety team on 024 765 22083.

In an emergency on campus, phone 024 765 22222 and in an emergency off-campus phone 999, which will take you through to external emergency services.

Students should always call Community Safety for emergency response requirements, i.e. first aid/ambulance/fire, safety and security issues on and off campus, mental health aid, pastoral care, facility support, outdoor event applications and entertainment support including external speaker events.

The Community Safety contact phone numbers can be found on the back of student and staff ID cards.

6.3.10 Chaplaincy

The Chaplaincy is a place of hospitality, safety, care and encounter. We're here for absolutely anyone, of all faiths and none, who would appreciate the different pace of our space and the support of our Chaplains.

If you need space to reflect in the midst of a busy academic life, you can find it here. If you have a particular faith and religion, we are able to help you meet with people who share your beliefs and can help make University a time of growth for you. In addition to a large central space used by all faith groups, we have a Christian Chapel, Islamic Prayer Halls and a Jewish meeting room with Kosha kitchens on Central Campus, plus Multi Faith Prayer Rooms on Westwood and Gibbet Hill Campuses. The Chaplaincy can be contacted on 02476523519 or chaplaincy@warwick.ac.uk.

6.4 Community and Values

At Warwick, we believe that every individual in our University community should be treated with dignity and respect and be part of a working and learning environment that is free from barriers, regardless of age, disability, gender reassignment, race, religion or belief, sex, sexual orientation, marriage or civil partnership and pregnancy or maternity status.

We value our diverse and international community, the pursuit and dissemination of knowledge and research with real impact.

We want to support our students and each other to become critical thinkers and collaborative yet independent learners – individuals with a global and sustainable outlook, who are able to make an active and positive contribution to society. At the same time, we are committed to working towards a supportive, accessible and inclusive environment.

We uphold the importance not only of freedom of thought and expression, but also the significance of academic and personal integrity, equality and diversity, and mutual respect and consideration for the rights, safety and dignity of all.

We place great importance on the responsible behaviour of both our students and staff at Warwick. It is important for you, as a student, to have an idea of Warwick's core values and an understanding of the primary expectations of student members of the Warwick community. Take a look at the following to help you understand what this means for you:

Warwick Values, summary of values set out by the university.

Dignity at Warwick Policy, setting out how our differences are respected and valued and how we aim to prevent and address harassment and bullying.

University Strategy and **University Social Inclusion Strategy**, which sets our vision as a world-class university and our values.

University Calendar, the main 'rule book' and includes ordinances and regulations which you need to be aware of, including examinations, academic integrity, use of computing facilities and behaviour.

Student Rights and Responsibilities, which provides quick and easy links to University regulations, policies and guidelines that govern what a student can expect from the University, and what they need to adhere to as a student.

7 Student Voice

7.1 Student-Staff Liaison Committee (SSLC)

SSLC stands for Student-Staff Liaison Committee. There are SSLCs in each department in the University that feed into both the Students' Union and the University administration. The Warwick Student Union also provides more information on academic representation.

SSLCs are committees made up of elected student representatives, also known as Course Reps, and members of staff, also known as Academic Convenors. They are student-led and provide an area for students and staff to discuss ideas and solve problems connected with teaching, learning and student support.

SSLCs allows students to have a say on their course, their department, and their resources and is a great way to input into your university. They also provide an opportunity for the department to consult with students and receive feedback on new proposals.

Students are elected to the position of course rep by their peers, and represent their course and year in the SSLC. As a Course Rep you must attend the SSLC meetings and maintain a dialogue with students on your course throughout the year.

If you're interested in the work of the SSLC, or have an issue you would like to be discussed, you should speak with one of your Course Reps. If you have questions about the running of the SSLC, you should speak with the SSLC Chair.

7.2 Module Feedback

7.2.1 How is Module Feedback is Collected?

Initial feedback is collected for each individual lecturer shortly before the half way point of their lecture series.

Final feedback is collected for each module shortly before the end of the lecture series.

Initial feedback usually takes place in week 4 and final feedback usually takes place in week 9. However, this varies for modules with mid-term start dates and split teaching.

A student representative will attend one of your lectures and ask you to complete module feedback online using a smart phone, tablet, laptop or other device. You will also be sent a follow up email if you have not completed the feedback.

7.2.2 What Happens to the Feedback?

Summary information and all comments are passed to the lecturer, the SSLC representative for the module and the Deputy Head of Department (Teaching & Learning).

The SSLC reviews themes observed in the comments and this is posted, alongside the summary information on the module information pages.

The lecturer writes a response to the feedback and this is posted on the module pages and, wherever possible, verbally returned to students in a later lecture.

SSLC reviews all modules to identify modules for commendation and passes unresolved issues to the Department of Statistics' Teaching Committee for further assessment / action.

There may not be sufficient time for the feedback that you give to have an impact for you and your cohort because some actions, such as changing the assessment weighting, have a significant lead time. However you will benefit from actions taken in response to feedback from the years above you and your feedback will benefit the years below you.

7.2.3 What Constitutes Useful Feedback?

You are accustomed to being on the receiving end of feedback when your work is returned with comments from the marker. If you think about what you do and do not find useful as feedback on work, you will be in a good position to provide helpful feedback on modules. Here are some points to start you thinking:

Be specific — be constructive: For example, a bare mark on a piece of work is not very helpful, since it gives no guidance as to what was wrong with it. In the same way, just saying that you did not like a module does not give any indication to the lecturer as to what steps they should take to improve the module. Was the pace too slow? Too fast? Did you find it hard to see the relevance of the material? Or is the fact that you didn't enjoy the module perhaps nothing to do with the teaching, but rather means that you made a mistake in an option choice and chose a module which turned out not to fit in with your personal interests? Make good use of opportunities for open-ended comments to explain these points.

Mention the positive as well as the negative: It is always good to know what you got right but discouraging to read comments on work which only mentions what went wrong with it. When a lecturer is doing something well, and you let them know that, then it gives them encouragement to do it again. So when you comment on a module, try to mention any features which you particularly enjoyed or found helpful.

Be honest with yourself: People often talk about 'teaching and learning' to show that the educational process requires participation from two people — the teacher and the student. You cannot expect to get full benefit from a module if you simply attend lectures and do any assessments — you need to do the module reading, participate fully in example classes, etc. So before you indicate that you did not get much out of a module, ask yourself honestly what you put in.

Try to separate personality from content: During your time at Warwick you may be taught by several dozen members of staff. It would be surprising if you liked all of them equally as people, or if there were not some who had habits and mannerisms which irritated you! But try to keep your reaction to lecturers' personalities separate from your reaction to their teaching. It is possible for you to regard someone as extremely irritating but still get a lot out of their teaching. Be considerate: Lecturers are people with feelings just like students. Sometimes you may need to be critical of aspects of a module, but you should try always to offer criticism in a sensitive way. Comments such as 'X is the worst lecturer I have ever had' are neither useful nor constructive.

Be conscientious: Please complete feedback forms for all your modules. If we only get a small number of forms returned, then we may well get a biased idea of students' views — and that idea may not coincide with yours. So don't lose your opportunity to be heard!

7.3 Course and Student Experience Feedback

The Department is constantly looking for ways to improve the experience we provide to our students. We can only do this if you give us your feedback and work with us to resolve any issues.

You can provide feedback via a number of ways;

- SSLC - you can contact your course reps and ask them to raise issues or propose an idea at the next SSLC meeting.
- Personal Tutor Meetings - during personal tutor meetings you may want to give feedback on aspects of your course.
- Statistics Department Surveys - you may be invited to take part in a survey on a particular topic. This is usually where we have identified an area that we could improve but need more information or a larger sample size to make the right decisions.
- Warwick Student Experience Survey - The University of Warwick usually runs a Student Experience Survey during the autumn term.
- National Student Survey - Third / fourth year students are invited to take part in the National Student Survey in February of their final year.
- Informal conversation - one of the most useful forms of feedback is often a chance conversation. You should feel able to chat to staff about your experiences.

7.4 Complaints

The Department of Statistics follows the University of Warwick Student Complaints Resolution Pathway for informal and formal concerns or complaints.

The aims of the Student Complaints Resolution Procedure are:

- to resolve complaints in a timely, effective and fair manner; and
- to resolve complaints as close as possible to the academic or service area in which they arise

A complaint is defined for this Procedure as "an expression of significant or sustained dissatisfaction where a student seeks action to address the problem".

The Complaint Form is available online.

8 Careers and Personal Development

8.1 Careers Guidance, Events and Resources

8.1.1 What Do Statistics Graduates Do?

Graduates from the Department of Statistics enter a diverse range of careers. Many opt to work within the Financial Services sector with the Actuarial, Accounting and Investment Banking opportunities being particular favourites. These roles often involve the study for professional qualifications such as ACA, CIMA, CFA and the actuarial examinations. Other frequent career choices include eCommerce, Business and Industrial Consultancy, Operational Research, Marketing, Scientific Research, and Government. Statistics graduates develop a strong range of transferable skills including excellent numerical, problem-solving and analytical abilities. These along with your ability to communicate complex ideas effectively are highly sought after by employers.

A number of students decide to continue in academia, studying for either a Statistics related Masters or PhD. Alternative study routes have included the study of Management Science & Operational Research or the PGCE teaching qualification.

8.1.2 Careers Guidance

Making good career decisions involves thinking about your interests and values and also spending time researching possible occupations. If you would like to discuss your ideas or feel you need support with working through your options and developing ideas then please book an appointment with a Careers Consultant. To contact Student Careers with general questions about support, events etc., please email careers@warwick.ac.uk.

8.1.3 Careers Information Resources

The Student Careers and Skills website gives you access to a range of information on career planning, job seeking, interview skills, and much more. Don't forget to check out the vacancy database which provides access to hundreds of opportunities for work experience and internships, as well as graduate vacancies.

8.1.4 Careers Events

You can keep up to date with the latest careers news and events by joining the Warwick Statistics Careers Facebook Page.

An extensive programme of events including skills development workshops, presentations on particular sectors and mock interviews are available throughout the year.

Don't miss the valuable opportunity to meet employers face to face – remember most of these events occur in weeks 1-7 of the autumn term as do many deadlines for summer programmes and graduate roles. Explore your options, compare organisations and find out what skills employers are looking for by visiting the Careers Fairs, employer presentations and alumni evenings. You will need to book online for most events as places are limited.

8.2 Making the Most of Your Time at University

Alongside the achievement of a good degree, employers are looking for students who have maximised the use of their time at university and got involved in a wide range of extracurricular activities. Many students help in the running of societies which helps to build personal skills such as communication, leadership, problem solving and team working.

Work experience in general can greatly increase your chances of receiving a graduate job offer. To explore opportunities for gaining experience both on and off campus, visit our Experience Portal.

Both employers and postgraduate course providers will expect you to be knowledgeable and assertive about the intellectual and personal skills which you have gained during your degree course. They are concerned about what you can do, in addition to what you have studied, and will require you to substantiate the claims you make when making applications. They will look at your past experiences, choices and behaviour to find evidence of these skills. If you want to access a range of skills workshops around both academic and professional skills, check out the Warwick Skills Service.

8.2.1 International Students

If you are hoping to find employment in the UK after graduation, and English is not your first language, think about ways in which you can improve your conversational English. To be successful at an interview you will need very good verbal communication skills, and sometimes our international students – despite having excellent academic results – will not be able to progress beyond this point because their spoken English isn't good enough.

The Centre for Applied Linguistics (CAL) runs classes for our non-native speaking students: see 'Learning English'. You can apply what you have learnt by joining clubs and societies and regularly mixing with students who are native English speakers.

8.3 Careers in Teaching

8.3.1 Introduction to Teaching Subject Education

If you are intending to take a PGCE (Post Graduate Certificate in Education) after your degree, have secondary teaching as one of your career options or want to develop your knowledge and experience of secondary Mathematics teaching and learning, then Introduction to Teaching could be for you!

As one of the leading providers of Initial Teacher Training, the University's Centre for Teacher Education is once again offering undergraduates the opportunity to try a 'taster' of

teaching. If you join the Introduction to Teaching module (ITT), you will look at some of the issues concerned with effective teaching and learning, and you will be given help and support to prepare for your school visits. If you then decide to do your PGCE at Warwick, you would automatically qualify for an interview with the Centre for Teacher Education.

8.3.2 Student Tutoring

Volunteering as a Student Tutor is a great way to decide if teaching is the career for you. The Student Tutoring project places volunteers in a classroom in Primary, Secondary and SEN schools across Coventry, Leamington, Kenilworth and Warwick. Volunteers will take on a teaching assistant role and work alongside class teachers to provide support to pupils. Placements are arranged to suit each individual and volunteers are able to choose the type of school, location and subject of their choice.

Sign up for Student Tutor and other Volunteering opportunities at the Warwick Volunteers webpage.

8.4 Letters of Reference

When you apply for employment or further training you will probably be asked for two academic referees. One of these will normally be your Personal Tutor, the other should be someone familiar with your work such as a lecturer who has marked some of your coursework or supervised a project - a lecturer who knows you, in other words, not simply one whose module you enjoyed.

Please note:

- Obtain early agreement from your referees to write references for you, and keep them informed of the applications you make.
- Request references at least 2 weeks before any related deadline, and provide the referees with up-to-date supporting material (CV, personal statement, etc.).
- Please allow for more time during the months of summer vacation.
- If you have difficulty finding a suitable person to act as a second referee, then the department has a process by which an academic member of staff will write a reference for you. If you wish to use this service you should complete the reference request form BEFORE submitting your application. Note however that references written by this system are likely to be limited to factual information, such as your academic performance to date.
- A second reference will only be provided if you complete a reference request form for each specific application and enter the contact details of the reference writer supplied to you.

9 University Information

9.1 University Policies and Regulations

9.1.1 Feedback and Complaints

We want you to be able to let us know when things are going well or there is something that you particularly like, but also if there is a problem that you don't feel you can resolve yourself. As part of this, we have a Student Feedback and Complaints Resolution Pathway and actively encourage feedback on all aspects of the student experience. While we are committed to providing high quality services to all our students throughout their University experience, if there is something that goes wrong and you want assistance to resolve, we have an accessible and clear procedure which you can use to make a complaint.

Health, Safety and Wellbeing Policy Statement

Smoking Policy

Anti Bribery Policy

Regulation 36; Regulations Governing Student Registration, Attendance and Progress

Study Hours Statement

Policy on Recording Lectures

Regulation 31; Regulations governing the use of University Computing Facilities

University assessment strategies

Policy on the Timing of the Provision of Feedback to Students on Assessed Work

Moderation guidance

Regulation 10; Examination Regulations

Regulation 11; Procedure to be Adopted in the Event of Suspected Cheating in a University Test

Regulation 23; Student Disciplinary Offences

Regulation 8; Regulations for First Degrees

A continuation of Regulation 8 is also available online.

Regulation 12; Absence for Medical Reasons from a University Examination for First Degrees

Undergraduate Degree Classification Rules

Harmonised First Year Board of Examiners' Conventions, including any approved exemptions and specific departmental requirements

Undergraduate Progression Requirements for Intermediate Years of Study

9.2 Support and Resources for Learning and Professional Development

9.2.1 Library

The Library has a designated Academic Support Librarian (ASL) for each academic department. The Academic Support Librarians are able to provide advice about Library services and resources for staff who are planning courses or putting together course materials and module websites. They can give advice on the Talis Aspire Reading List software which can help you with acquiring resources and which improves the student experience by connecting them seamlessly to their reading material.

The ASLs work with academic colleagues to embed information skills throughout the curriculum, including the Student as Researcher programme. They can also provide discipline-specific text about the Library for student handbooks. These include:

- General information about accessing and using the Library, various Learning Grids and the Modern Records Centre
- Information sources for your subject
- Developing information and research skills
- Sources of help and advice

See the Library website for general information, and subject web pages for support in starting research in specific subject areas. Regular news and updates can be found via the Library's homepage, Facebook pages (@WarwickUniLibrary) and its Twitter / Instagram account (@warwicklibrary).

The Library also manages a number of learning and teaching spaces from which skills enhancement and community engagement programmes are run, including a space in Leamington.

9.2.2 Student Careers

The Student Careers team offers a wide range of online resources, workshops, 1:1 information, advice and guidance, employer presentations, careers fairs and a student helpdesk accessible in person, by email and phone. Student Careers can help students:

- Understand what's important to them, their values, strengths and career goals.
- Recognise and develop the transferrable skills employers look for.
- Research employers, search for vacancies, gain work or volunteering experience and find a job or further study place for after graduation.
- Each academic department has a designated Careers Consultant who can provide discipline-specific support for students and online careers. This can include 1:1

careers guidance, support for alumni events and discipline-specific information sessions.

9.2.3 Skills and Student Development

Skills and Student Development offers a wide range of online resources, workshops, 1:1 support, advice and guidance at all levels of study. There are three distinct programmes aimed at undergraduates, taught postgraduates and postgraduate research students. This includes:

- Student Enterprise Fund
- Undergraduate Research Support Scheme
- 1:1 appointments on academic skills
- Personal writing mentors
- Drop in sessions for support in maths and stats.
- Study and Research Skills sessions like academic writing, notetaking, speed reading, project management, critical thinking and exam revision.
- Personal Development sessions like presentation skills, leadership, assertiveness and team work
- Programmes and events for female personal development

The Warwick Skills webpage contains further information.

9.2.4 IT Services

IT Services provide the essential resources and support necessary to give all students access to information technology services and support. If students have problems with IT related issues, IT Services provide a dedicated Help Desk. Students can go to the drop-in centre on the 1st floor of the Library building (Monday to Friday, 9am-5pm), telephone 024 765 73737 (Monday to Friday, 9am-5pm) or email: helpdesk@warwick.ac.uk

Every student, with the exception of those students on courses at partner institutions which are validated by the University, is entitled to register to use the services provided by IT Services, which can be accessed from anywhere on campus. Information on setting up an account, accessing the network from on and off campus, printing and purchasing computers is available on-line at the IT Services webpage](https://warwick.ac.uk/its).

IT Services also produce information on acceptable use of University IT facilities for students and staff.

There is a range of Help Desk Leaflets providing useful IT support information. As well as being accessible online, copies can be picked up from the IT Services Help Desk Drop-in centre.

IT services also provide support for personal computer-related issues such as slow performance, removing viruses, replacing hardware and assisting with file recovery.

The training service provided by IT Services is available to all University students and is provided to facilitate students to work more effectively with applications delivered by IT Services:

IT Services provides a number of open access work areas across Gibbet Hill, Westwood and main campuses, accessible to all students, and the University provides student residences with a network connection and access to wireless.

Further information on the Residential Network Service (ResNet) is available via the ResNet webpage.

9.2.5 Language Centre

The Language Centre supports the University's commitment to the increased provision of foreign language learning opportunities for undergraduate and postgraduate students across the University. For those interested in developing their language skills, the Language Centre offers a wide range of modules and the facilities, resources and programmes to support students. There are a number of choices available for acquiring a new foreign language or brushing up language skills:

i) Modules for credits on the academic programme

These can be taken as part of an undergraduate degree course, but must be agreed with the student's home department before enrolling. There are a range of levels available, as well as accelerated options for those who want to develop their language skills at a faster pace.

ii) Academic modules not for credit

The same modules as those available for academic credit are also available to take in addition to degree studies. A fee applies to these modules.

iii) Lifelong Language Learning (LLL) Courses

A programme of language courses available to students and staff from beginner through to advanced level.

Online enrolment for Lifelong Language Learning courses is available from mid September. The Language Centre is located on the ground floor of the Humanities Building and can be contacted by email: language.enquiries@warwick.ac.uk

9.3 University Contacts: Offices and Services

9.3.1 Academic Registrar's Office

a) Academic Office

b) Student Internationalisation

c) Student Recruitment, Outreach and Admissions Service

d) Student Careers

e) Skills & Student Development

f) Education Policy and Quality

9.3.2 Academic Office

a) Modules, Marks and Assessment

b) Student Records

c) Awards and Ceremonies

d) Student Finance

e) Student Funding

f) Doctoral College